EdgeX - Application Working Group

Ireland

2/26/2021

Attendees:

LC Lenny (Intel) (Host, me)

JW Jim White (Co-host)

JW Jim Wang (Intel)

SS Siggi Skulason (Canonical)

WC Walt (Intel)

Topics:

- Status
  - Completed
    - Remove deprecated environment variables.
    - Rename MqttBroker configuration section to ExternalMqtt to match binding type name.
    - Change HTTP Export Secret key names so the value is overridable.
    - Updated ASC for SecretStore config addition of Type='vault'
    - **Fixed**: Failure in reloading Configurable Pipeline doesn't cause execute errors, thus hidden.
    - **Fixed**: V2 HTTP Trigger with invalid event returns 500
  - WIP
    - Refactor Binding configuration. Trigger coincides betters with implementation and documentation. Sub-configuration belongs under Trigger configuration.
      - **[Binding]** => **[Trigger]**
      - **[MessageBus]** => **[Trigger.EdgexMessageBus]**
      - **[ExternalMqtt]** => **[Trigger. ExternalMqtt]**
  - Up next
    - Refactor SDK: Add interfaces for AppSdk and AppContext so services can mock them for unit testing.
    - Lots of Documentation
    - Refactor Initialization of SDK
    - Consume core services V2 APIs via go-mod-core-contracts **(On-hold)**

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- **Waiting on V2 clients to be 100% complete**
- More configuration refactor?
  - App Service Configurable's Nops
    - Compression – Change to Type parameter
  - Move ApplicationSettings to writables
    - Add func to register callback when ApplicationSettings change.
- Review of LLRP App Service
  - Need to create PR
  - Need volunteers
    - Lenny & Siggi & Jim
- Caching of DeviceResources – Where to implement?
  - core-contracts Client? **Yes**
  - SDK?
- Opens
- Board

2/18/2021

Attendees:

- M Mike (Host, me)
- JW Jim White
- LG Lenny Goodell (Intel)
- JW Jim Wang (Intel)
- W(Walt (Intel)

Topics:
- Opens
- Board
- Rocky Update
- Ireland Status Update (Any calls on what's out?)
  - Board updated – Fork Pipeline, Topic/Pipeline is at risk/out of scope for Ireland
  - Stretch goal for Multiple Export

EdgeX - Application Working Group

Attendees:

MC Mike (Intel) (Host, me)
LG Lenny Goodell (Intel)
WC Walt (Intel)
BM Brian McGinn (Intel)
JW Jim Wang (Intel)
JW Jim White

Topics:
- Fix for handling AddEventRequest vs Event DTO and how that is now working.
    - First event from Core is correct, Event DTO is put on message bus, but next App Services in chain expecting AddEventRequest.
    - Couldn't chain App Services together
    - Added bool for expecting EventDTO in order to allow chaining of app services
    - Explore if we could do this interpretation implicitly without config (Lenny will take a look)
- Opens
- Board

EdgeX - Application Working Group

Attendees:

MJ Mike Johanson (Intel) (Co-host, me)

JW Jim White (Host)

LG Lenny Goodell (Intel)

RJ Rocky Jin@EMQ

BF Beau Frusetta (Intel)

BM Brian McGinn (Intel)

JW Jim Wang (Intel)

W(Walt (Intel)

Topics:
- Revisit template location and SDK version it uses
  - Master is using latest SDK, release/before tag/ ensure that template is using tagged SDK.
  - Add Echo statement to makefile to ensure version being used is clear
- Preview of App Service template so far
- Board
- Opens
  - Kuiper
    - Revisit implications when V2 is more complete to understand impacts to Kuiper
    - Clients modules not used, Restful call used, go-mod-messaging is used, along with models
    - 1 month-ish timeframe (2/4)
  - Decide about ValueDescriptor Name
- Kuiper Team

EdgeX - Application Working Group

1/29/2021

Attendees:

MC	Mike (Intel) (Host, me)	
BC	Brad Corrion (Intel)	
JW	Jim White (Co-host)	
BF	Beau Frusetta (Intel)	
JW	Jim Wang (Intel)	
LG	Lenny Goodell (Intel)	
MG	Marcelo Gallardo	
MT	Miguel Torres	
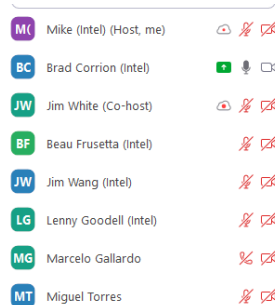
Topics:

- Brad Corrion OpenVINO Model Serving Demo
    - TF on port 8500,8501, open vino model serving port 9000.
    - Single docker command to run open vino model serving
    - Goal: Single file go application
        - (20 min build time with go cv) – clunky experiment, min 200MB application
        - 7MB Application with single resize dependency
        - 4D Int Array, Challenge in understanding format of model (i.e BGR vs RGB), can't assume, have to research and read documentation of who created model
        - Had to rebuild and change edgex-device-camera-go
    - Discussion Item: MQTT Default for Windows, add build flags to avoid ZMQ issues on Windows when building
    - Discussion: Should we add CBOR functions to SDK? i.e Resize?
    - Biggest issue: every model has a different structure
- Docs – need to check links
- Where do we put the App Service template?
    - Examples or SDK?
    - Create an empty template for both device services and new app services, would be nice to have cli generate templates for you, but manual to start. More documentation on what, when, and how things are called.
    - Separate repo for each template
- Rules Engine Issue: https://github.com/edgexfoundry/edgex-go/issues/3009
    - Rocky will get with Gavin to check on Issue
    -
- Do we still need PushToCore? **YES**

EdgeX - Application Working Group

-
  - o   Investigate LLRP service to see if this is a requirement (lenny will take a look)
- Opens
  - o
- Review Board
- Brad's Feedback:

Issues uncovered:

1. Bitten by lost time configuring and re-configuring camera device service TOML, as it was not clear I wasn't actually changing things

    1. Need to separate device service configuration from device instance configurations (e.g. cameras)

2. device-camera-go uses an edgex digest algo. It failed with Amcrest cameras, but this one worked: "github.com/xinsnake/go-http-digest-auth-client" (BSD License)

3. Links in section 3.6.1.4 are broken https://fuji-docs.edgexfoundry.org/Ch-ApplicationServices.html

4. CBOR events are not fun, can't observe contents watching the event bus

5. Developer documentation doesn't make it clear how to pass an Event onwards. I know to use the Complete() call in the App Svc SDK, but do I need to create a new Event and serialize it? Just push a payload into the byte buffer?

7. If using the MQTT as message bus, why not use a rich topic? /edgex/events/ds/device-camera-go/Camera001/onvif_snapshot -- MQTT wildcards make filtering a snap

8. Seems confusing to use a ValueDescriptor to have to know that a payload is in CBOR

    1. Prefer the CloudEvents model where data and type are identified separately

TOML file that worked for the MQTT message bus:

```TOML
[MessageBus]
Type = 'mqtt'

  [MessageBus.SubscribeHost]
  Protocol = 'tcp'
  Host = 'host.docker.internal'
  Port = 1883
```

```
[MessageBus.PublishHost]
Protocol = 'tcp'
Host = 'host.docker.internal'
Port = 1883

[MessageBus.Optional]
ClientId ="CoreData"
# Connection information
Qos        = "0" # Quality of Sevice values are 0 (At most once), 1 (At least once) or 2 (Exactly once)
KeepAlive   = "10" # Seconds (must be 2 or greater)
Retained    = "false"
AutoReconnect  = "true"
ConnectTimeout = "5" # Seconds
```

-

EdgeX - Application Working Group

EdgeX - Application Working Group

1/21/2021

Attendees:

MJ Michael Johanson (Intel) (Co-host, me)

JW Jim White (Host)

JR Jin Rocky (Co-host)

LG Lenny Goodell (Intel) (Co-host)

JW Jim Wang (Intel)

BF Beau Frusetta (Intel)

Topics:

- Rules Engine Issue: https://github.com/edgexfoundry/edgex-go/issues/3009
  - Rocky will get with Gavin to check on Issue
  -
- Do we still need PushToCore?
  - Investigate LLRP service to see if this is a requirement (lenny will take a look)
- Opens
  - FYI: Beau working on running containers as non-root (Contribution to Kuiper)
    - Kuiper team to resolve remaining issues on PR (https://github.com/emqx/kuiper/pull/689)
    - Need to update compose file in EdgeX to use next release? ~About next month
- Review Board
- Revisit Docs Conversation in a couple weeks.
  - Mike will make a PR for 2.0 Docs
  - https://github.com/edgexfoundry/edgex-docs/issues/299 (Closed)
  - https://github.com/edgexfoundry/edgex-docs/issues/298 (Open)
  - Raspberry Pi PR – Lenny to review

EdgeX - Application Working Group

1/15/2021
Attendees:

EW EdgeX Working Grou... (Co-host, me) ↑

JW Jim White (Host)

LG Lenny Goodell (Intel)

W(Walt (Intel)

+Jim Wang

Topics:

- Event DTO and progress...
    o Multiple Events were backed-out – going back to Single Event
- Opens
    o FYI: Beau working on running containers as non-root (Contribution to Kuiper)
    o Issue #3009 edgex-go – investigate and ping team if any issue with Kuiper or not
- Review Board
- Revisit Docs Conversation in a couple weeks.
    o Mike will make a PR for 2.0 Docs
    o https://github.com/edgexfoundry/edgex-docs/issues/299 (Closed)
    o https://github.com/edgexfoundry/edgex-docs/issues/298 (Open)
    o Raspberry Pi PR – Lenny to review

EdgeX - Application Working Group

1/7/2021

Attendees:

+ Jim Wang

Topics:

- Kuiper Dot Release for ZMQ Issue
  - For EdgeX Dot Release – Kuiper team will release 1.1.1 with updated go-mod-messaging library with ZMQ fix along with new Kuiper features.
- When do we update examples for current WIP?
  - Topic to be re-raised in core WG to tag examples so lock compatibility with a current release. No CI/CD needs to be implemented. Want to do this so that examples can be updated along with current changes for next version of EdgeX.
    - ~~DO IT! Tag examples independent of main EdgeX, include a changelog/readme that describes updated examples. Each example has readme~~
    - Branch examples at Major EdgeX Version only (ie.1.0 branch), and main becomes 2.0 compatible only
    - No Immediate Action
- Opens
- Review Board
- Revisit Docs Conversation in a couple weeks.

EdgeX - Application Working Group

12/10/2020

Attendees:

Topics:

- Code Removal going well
- Community Contibution .Stop()
  - Wants MakeItRun() to exit gracefully without exiting the application. Need to get more details on use case.
- https://github.com/emqx/kuiper/issues/614
- When do we update examples for current WIP?
  - Topic to be re-raised in core WG to tag examples so lock compatibility with a current release. No CI/CD needs to be implemented. Want to do this so that examples can be updated along with current changes for next version of EdgeX.
- Review Board
- Opens

EdgeX - Application Working Group

12/04/2020

Attendees:

EW EdgeX Working Group 1 (Host, me)

LG Lenny Goodell (Intel)

JW Jim Wang (Intel)

JW Jim White

W(Walt (Intel)

Topics:

- When do we update examples for current WIP?
  - Topic to be re-raised in core WG to tag examples so lock compatability with a current release. No CI/CD needs to be implemented. Want to do this so that examples can be updated along with current changes for next version of EdgeX.
- Review Board
- Opens

EdgeX - Application Working Group

11/20/2020

Attendees:

MJ   Michael Johanson (Intel) (Host, me)

A(Anthony (Intel) (Co-host)

LG   Lenny Goodell (Intel)

A   Anthony

JW   Jim Wang (Intel)

JW   Jim White

RS   Rex St. John

W(Walt (Intel)

Topics:

- LLRP RFID App Service – Anthony Casagrande
- Review Board
- Opens

EdgeX - Application Working Group

Hanoi

11/06/2020
Attendees:

Topics:

- https://github.com/edgexfoundry/app-service-configurable/issues/131
- Review Board
- Opens

EdgeX - Application Working Group

Attendees:

Jim White

Lenny Goodell

Mike Johanson

Rocky Jin

Jim Wang

Beau Frusetta

Topics:

- Anything for code freeze?
- Do we have anything else that's outstanding for this release?
    - No, all good for release!
- Review Board
- Opens

EdgeX - Application Working Group

10/23/2020

Attendees:

Jim

Lenny

Mike
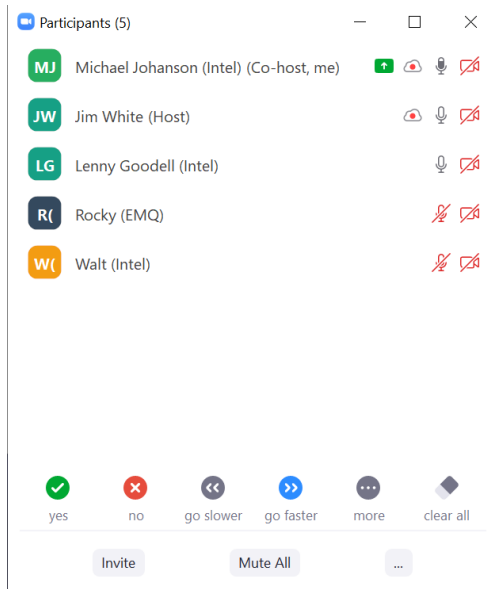
Topics:

- Do we have anything else that's outstanding for this release?
  - No, we're all good!
- Review Board
- Opens

EdgeX - Application Working Group

10/15/2020

Attendees:

Topics:

- Scaling App Services
  - "Shared Subscriptions" – MQTT
    - "$$share/group1/edgex/events" – Round Robin
    - Lenny to update Cloud on method.
  - Store and Forward should be tested for behavior when scaled.
  - Batch recommended for time
  - Service Key Generation needs to be done for dynamic scaling, requires manual keys for scaling at this point.--> maybe?
- Refactoring for Ireland
  - Unit tests of main, because SDK it is not an interface. Implment as interface.
  - Naming of SDK
- Review Board
- Opens

EdgeX - Application Working Group

10/1/2020

Attendees:

Topics:
- HTTP PUT:
  https://edgexfoundry.slack.com/archives/CE48UTVQ9/p1601550691017100?thread_ts=1600968004.005800&cid=CE48UTVQ9
  - Will Create a separate HTTPPut function alongside HTTPPost
- Review Board
- Opens

EdgeX - Application Working Group

EdgeX - Application Working Group

9/17/2020

Attendees:

M	Mike (Me)
🐙	Jim White (Host)
👤	Haresh Kainth
LG	Lenny Goodell (Intel)
JW	Jim Wang (Intel)
W(	Walt (Intel)
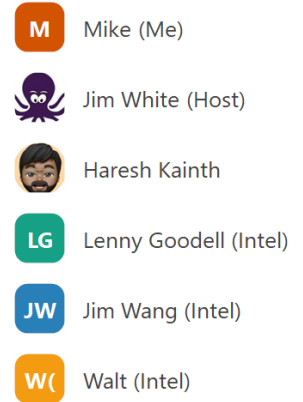
Topics:
- Topics for Ireland
  - V2 API Consumption
    - New Event DTO on the bus
  - App Service leverage notification/alert service (Reference Design for Intel Loss Prevention)
    - Subscription added to client APIs
  - Implementation of DS to App Services via Message Bus
  - Tech Debt:
    - Handley Array of types w/ JSON Logic?
    - Filter based on value type (such as int)
  - Within the same app service
    - "Conditionalizing/Branch" the pipeline
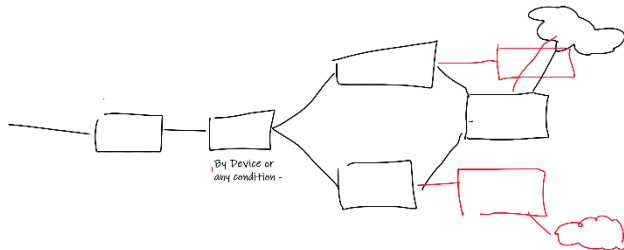
    - ▪
    - Pipeline per topic or device
    - Multiple Export Destinations
  - Relook at TensorFlow (or others) Example
    - Predictive Analysis (Temp, Vibration Data, Combination)
  - Data Streaming support?
  - Media Streaming (Audio/Video) Support
    - Recommend for Device Service integration to retrieve inference data (media streaming outside of edgex)
    - Transform to monitor object in stream (Object Recognition inference data)
  - Integrate w/ OpenVINO
    - Send commands to control device for streaming
  - Plugin for App Services to integrate/leverage Accelerators?
    - OpenVINO can handle this directly

- - Output aggregator/multiplexor? Something to think about ---
- Review Board
- Opens

EdgeX - Application Working Group

Attendees:

Topics:
- Store Secret w/o path issue
  - IOTech has been testing V2, can't add a secret with a blank path – this is because base path is not accessible due to permissions. Need to require that a path be there
  - Provide error/warning message when blank path has been specified – needs to be enforced sooner (detect configuration)
    - Not forced for configuration
    - V1 Shouldn't be a breaking change
    - V2 won't be a breaking change
  - The name "path" is frowned upon, should be "namespace" or something similar? – do this for V2? – Address as part of Secret Provider ADR for abstraction – no immediate changes for now

- MQTT Trigger design/requirements
  - Lenny has started initial impl
  - Name to be internal/external
  - Detect cbor/json
- Conventional Commits update
  - Remove "improvement" and "chore" type
  - Scopes proposal:
    - - config
      - Remove configuration
    - - security (rather than secrets)
    - Internal
    - util
- Go 1.15.2 update
  - **Done**
- s
- Rules Engine Update - Rocky

M	Mike (Me)
	Jim White (Host)
BN	Bryon Nevis (Intel)
BM	Brian McGinn (Intel)
JW	Jim Wang (Intel)
JR	Jin Rocky
LG	Lenny Goodell (Intel)
	Malini Bhandaru
W(	Walt (Intel)
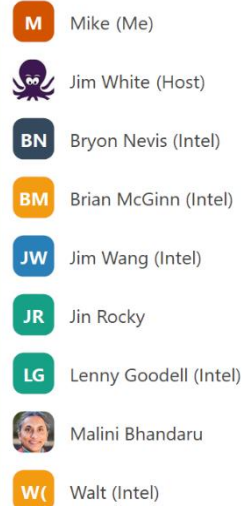
EdgeX - Application Working Group

9/11/2020

EdgeX - Application Working Group

9/3/2020

Attendees:

Topics:

- Tag EdgeX Examples Repository for each release?
  - Start adding examples that require new features of the current release that aren't in previous releases
  - Could we add a read me/change log of when examples are added and what version of EdgeX they are compatible with
  - **Propose topic for TSC Level – Architects meeting (Jim to add to Agenda)**

- Review Board
- Opens
- Rules Engine Update - Rocky

M Mike (Me)

Jim White (Host)

LG Lenny Goodell (Intel)

RJ Rocky Jin - EMQ

W(Walt (Intel)

BM Brian McGinn (Intel)

Haresh Kainth

EdgeX - Application Working Group

8/28/2020

Attendees:

Walt (Intel)

Haresh Kainth

BM Brian McGinn (Intel)

CK Charles (Chuck) Knox (Intel)

Jim White

Topics:

Jim – Any update about Fledge? – Lower priority nothing for us to work

EdgeX CLI

Thoughts on capabilities needed?

Once telemetry/metrics is added to AppServices and EdgeX in general

Could this be retrieved via CLI command?

App Service Configurable – what about commands for managing ASC.

Turning functions on/off in a pipeline

Deploying new App Service Configurable

./edgexcli asc deploy "NewASC" ./config.toml

Review Board

Opens
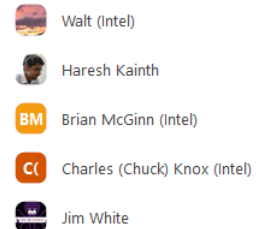
EdgeX - Application Working Group

8/20/2020

Attendees:

MJ Michael Johanson (Intel) (Me)

LG Lenny Goodell (Intel)

    Walt (Intel)

    Haresh Kainth

BM Brian McGinn (Intel)

C(Charles (Chuck) Knox (Intel)

    Jim White

MS Melvin Sun (Intel)

RJ Rocky Jin (EMQ)

Topics:
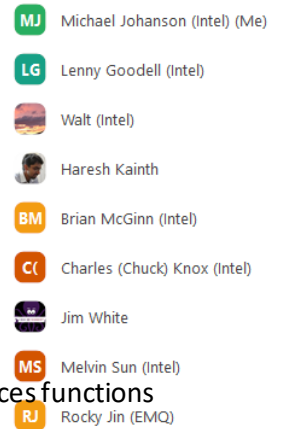
- MQTT Trigger
  - Be able to connect to a cloud based MQTT broker – to trigger App Services functions and also enabling Commands
  - Can use HTTP Trigger and Messagebus trigger as example implementations/reference for new MQTT implementation
  - Create Issue on board a "spike" and meet with Felix/Cloud to understand more detail
    - Expand Commanding Capability w/ App Services?
    - **Jim to get more detail**
- Metadata about the "gateway" or host platform
  - Tags to be added to event model/DTO
    - **Lenny to add**
  - Need to create transform that populates **(Intel team to scope)**
    - To be populated in [Writable] section of config
    - Needs to be able to be leveraged from ASC
    - Append – but don't override/ or remove duplicates
      - App Service Specific tags
      - Out of scope:
        - Core Metadata – generic tags
          - Location Hierarchy
          - Name of instance
- Fledge Transform
  - Custom App Service example to be created by Jim
    - Goal is to create connectors
  - The "other" IoT Project in LF Edge
  - No built-in transform
- Board Review

EdgeX - Application Working Group

MJ Michael Johanson (Me)

Haresh Kainth

LG Lenny Goodell (Intel)

CK Charles Knox (aka Chuck, Intel)

Siggi Skulason (Canonical)

8/14/2020

Attendees:

Topics:

V2 Status updates

- PR for Secrets Endpoint wrapped up – status codes misunderstanding, shouldn't be returning 207, PR open for fix – 400/500 will be used for errors, 201 is created
- V2 Wrapped up after fix for status codes, TAF Tests will be handled by QA.
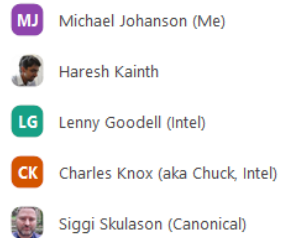
Board Review

Opens:

- Performance Concerns when Analytics start being included – should specify minimum requirements.
- Re-surface "gateway identification" in core WG meeting.
    - o Enrichment Transform – add fields to JSON / possibly create new type
        - ▪ Gateway Name/ID
        - ▪ Location
- High Availability
    - o Configuration w/ Consul needs to be re-evaluated
    - o Health needs to be adapted for particular orchestrators
-

EdgeX - Application Working Group

8/6/2020

Topics:
- V2 Endpoint for Trigger
  - will not be implemented as "V2" with DTOs as it is to the rest of EdgeX
  - V2 will be identical to V1 – despite no changes
- Keep V1 Endpoints longer?
  - /ping, /config, /metrics – if EdgeX is sole caller why keep V1
  - Plan to revoke on same schedule as rest of EdgeX
-

EdgeX - Application Working Group

7/30/2020

Topics:

Status Updates:

- Startup duration fix in SDK PR merge soon (Merged)
- V2 Swagger complete – Complete and merged, ready to implement
- V2 Ping with any new V2 layers about to get started.
    a. Starting with this endpoint first for V2 – Standard GETs
- Individual issues created for each V2 endpoint.
    a. Will work on these after Ping

Log start-up time merged, but has issue

Need to adjust location to accurately measure time

Opens – Add Security Endpoint integration with UI in the future

Scheduling suggestions

- Every other week – alternate between Thursday Afternoon @430PM PDT, Friday Morning @ 8AM PDT

Review Board

MJ	Michael Johanson (Me)
JW	Jim White (Host)
LG	Lenny Goodell (Intel)
	Walt (Intel)
BM	Brian McGinn (Intel)
	Gavin Lu
JW	Jim Wang (Intel)
JR	Jin Rocky

EdgeX - Application Working Group

7/23/2020

Topics:

Application Configurable UI integration complete – woohoo!

Enhancements:

- **Team to Brainstorm Validation techniques for order**
  - Metadata for input/outputs to enforce
- Change "Download Profile" to "Download Configuration"
- Support re-ordering of functions
- Indicate when changes have been made, but not yet deployed

EMQ UI Demo

Improvement for commands:

Rocky: Need to make sure it is REST Request

Rocky to get with Sheng Qi on ways to improve UI

MJ Michael Johanson (Me)

JW Jim White (Host)

W wshengqi

LG Lenny Goodell (Intel)

Walt (Intel)

JR Jin Rocky

BM Brian McGinn (Intel)

CK Charles Knox (aka Chuck, Intel)

EU Eno Udoko

Gavin Lu

EdgeX - Application Working Group

7/16/2020

Attendees:

Michael Johanson (Me, part

Jim White (Host)

Jin Rocky

Walt (Intel)

Bill Mahoney (Intel)

Chuck Knox (Intel)

Eno Udoko

Jim Wang (Intel)

Lenny Goodell (Intel)

Topics:

Review Bot PRs for ASC and SDK

App Functions SDK Examples "Hello World" – include in main repo?

       Breaking out go.mod per example in example repo is good enough

       Leaving in examples – not adding to main repo

Restructure App Service Config such that it can be expanded

       Want "On the fly configuration" which requires ASC components with custom function

       Low Priority/tech debt – create issue – determine if knowledge gap or missing need

Revert Mongo Removal – to be discussed at next Architects Meeting

Push Meeting to 4:30 – 5:30PM

EdgeX - Application Working Group

New Topic: Cloud control of EdgeX deployment/Device commands to be relayed to devices

Possibility: Kuiper to connect to cloud MQTT Broker to receive messages and connect to command service

Challenge: Listing of supported commands of a given EdgeX deployment reported out to cloud.

Rocky to put together proposal for a possible way to accomplish this

Board Review

7/10/2020

Attendees:

Topics:
- Add Restriction on scope
  - Transforms
  - secrets
  - Store-forward
  - Configuration
  - SDK
  - Triggers
  - Context
- Mike: Verbose error messages for bot to determine why
- Review PRs
- Review Board

EdgeX - Application Working Group

6/26/2020

Attendees:

MJ Michael Johanson (Me)

LG Lenny Goodell (Intel)

T tkthimma

BM Brian McGinn (Intel)

e Eno Udoko

Walt (Intel)

+Jim White

Topics:

Review Dependency Updates

Quick chat about TensorFlow.

      Example service is good move to start

Core Agenda Item -

      Created timestamp being omitted before broadcasting to bus

Board Review

6/19/2020

Attendees:

Michael Johans... (Me,

JW Jim White

Walt (Intel)

EdgeX - Application Working Group

Topics:
- Dependabot
    - Mike to add bot to sdk and ASC.
- Mike to Ping Jim about getting Github Actions on Agenda for Architects meeting
- Continuing Doc Updates
    - How to Add app service endpoint to Kong – Issue created – Assigned to Jim Wang
    - ~~Need to add section for accessing Context when using AddRoute function~~
- Review board

EdgeX - Application Working Group

6/12/2020

Attendees:

MJ Michael Johanson (Me)

JW Jim White

LG Lenny Goodell (Intel)

Walt (Intel)

Topics:
- All good for .release?
  - YES!
- ASC Snap Version
  - Can we grab the tag for accurate versioning of Snapcraft.yml - currently it is hardcoded
    - Lenny to Check w/ Lisa if we can grab this from the pipeline
- Examples Config & versions
  - Update db to redis
  - Copy and move go.mod to individual examples
  - Document version compatibility for examples
- Docs Restructure
- Board Review
- Flag Parsing issue in go-mod-bootstrap
  - "=" fix for now
- (Jim) - AI/ML Exposure – TensorFlow, FogHorn, -- focus on structured sensor data first
  - Mike to explore some basics

EdgeX - Application Working Group

6/5/2020

Attendees:

MJ Michael Johanson (Me)

BM Brian McGinn (Intel)

JW Jim White

LG Lenny Goodell (Intel)

Walt (Intel)

Topics:

LLRP App Services

- Configuration Service
- Break-up service
- Rally the troops from Intel to present
- How do we start organizing App Services by vertical

Need a template – w/ go.mod, dockerfile, main.go for everything to scaffold an app service.

Brainstorm Batch Persistence (What do we do if the service crashes while batch is being created)

Option 1:

Do Nothing – value of data lost after few seconds – it becomes irrelevant and the data is no longer actionable – new data should be flowing when system comes up again.

Make an option/flag on whether or not persistence is turned on for batching data.

Option 2:

Rest query to core data for non-pushed data on startup – sorted by datetime -- re-running the pipeline if needing to be retried.

PreReqs: Persistence turned on and **MarkAsPushed** is being used

Query based on markaspushed and related filters(I.e. devices filters, valdescriptors)

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Option on CoreData re-push everything on the bus after crash that hasn't been "markaspushed".

MarkAsPushed – First to update problem – What if multiple services use same data and only one successfully processed.

Thought: MarkAsPUshed per app service DB

Option 3:

Write every record to the database that is mid batch – and purge when batch is ready.

EdgeX - Application Working Group

5/29/2020 - Cancelled

5/22/2020 - Cancelled

5/15/2020

Attendees:

MJ Michael Johanson (Me)

JW Jim White

TC Trevor Conn

    Walt (Intel)

LG Lenny Goodell (Intel)

Topics:

Review Board

　　Check w/ Tony/Ian on #32 for a status update

　　TBD - Couple weeks out: Discuss Implementation of #258, ways to store data without duplicating data in another persistent store

　　Architect Meeting Topic – Gateway Identity

EdgeX - Application Working Group

Geneva

5/8/2020

Attendees:

MJ Michael Johanson (Me)

LG Lenny Goodell (Intel)

TC Trevor Conn

JW Jim White

W(Walt (Intel)

Topics:

- When *exactly* are we tagging? **5/12/2020 by EOD**
  - SDK First, then ASC
  - MQTTS Secret Manual Integration Test
- Add "Semantic PR" to App Service Configurable
  - **Mike will submit LF Ticket for Semantic PR**
  - Revisit when to roll out to rest of WG
- PR For Documentation
  - App Service Configurable update docs w/ limitations and list of support functions (mappings to SDK funcs)
  - Breakout App Functions SDK section into more logical sections
  - **Jim to bring up to TSC appropriate time to "rev" docs**
- Generate Changelog
- Check In w/ Tony for ASC Snap
- Kuiper – Documentation
  - **Jim to reach out to Rocky on documentation for Kuiper**

EdgeX - Application Working Group

5/1/2020 - Hanoi Planning
4/24/2020 - Cancelled
4/17/2020
Attendees:

MJ Michael Johanson (Me)

LG Lenny Goodell (Intel)

TC Trevor Conn

e   Eno Udoko

    Jim White

WM Walt M

Topics:

Kuiper Update:

- will merge latest update of compose
- Had conversions errors – provided example on how to decode floats properly
- **Lenny to put together small demo for Hanoi Talks on EMQ X Kuiper**

Review Board

Go-mod-bootstrap update?
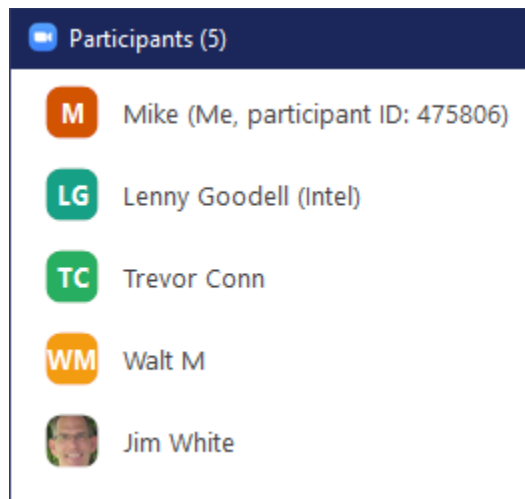
     Going well – has reduced code in SDK startup

Will release v1.1 of SDK and subsequently the Configurable App Service once SDK has been tagged for release

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Attendees:

Topics:

Status Update:

- 2nd SecrectClient complete
  - o Mike - Need to figure out whats wrong with App-service-example for Secrets
- bootstrap integration in progress.
  - o Lenny needs to get with Michael Estrin – can't get compiler syntax to work for signal via channel for type when config has been updated.
  - o Handlers for SDK still need to be done
- Cloud event has been completed as an example
  - o CLosed out cloud event transformation issues

Review Board

New Items

EdgeX go may need secrets to connect/authenticate w/ MQTT BRoker – need to loop in Bryan Nevis - Jim to add this to Hanoi Planning discussion. Need to get secrets into vault for authenticated broker.

Shouldn't require exec into EMQ X Kuiper container to configure it – need more discussion on containerized version of rules engine.

EdgeX - Application Working Group

Attendees:
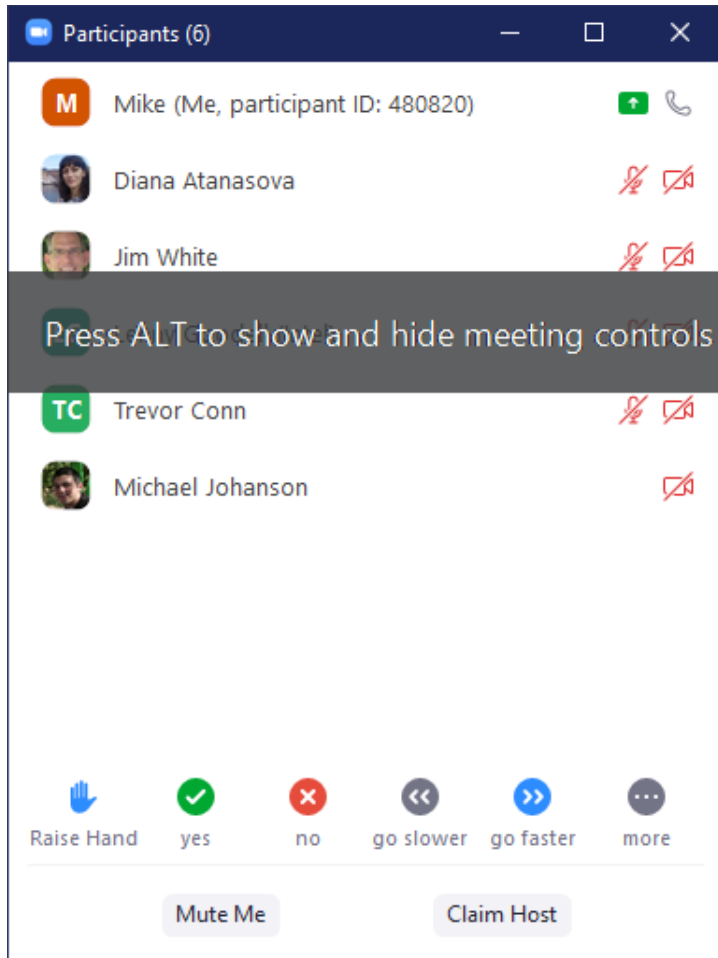
Topics:

CloudEvent Dependencies

No-Go on pulling in the cloudevent SDK into the App Func SDK

Options:

1) Create an app service example that pulls in the cloud event SDK to show how it can be leveraged

2) Conform to V1 Spec only w/out Cloud Event SDK and provide to/from transform in App SDK

3) Fugghedaboutit

MQTT

- Create option to specify type of authentication method

EdgeX - Application Working Group

•

3/27/2020

Attendees:

M Mike (Me, participant ID: 49)

e Eno Udoko

LG Lenny Goodell (Intel)

W(Walt (Intel)

AM Adam Mitchell

Topics:

- Status Update:
  - Updating ASC w/ latest features
  - MQTT / HTTP Export w/ Secrets Support
    - MQTT Export /w secrets will be a new transform, for Geneva will have 2 MQTT Exports – one with secrets, one without, will deprecate v1 in Hanoi
- Documentation updates for Edgex Docs
  - Will move documentation from App Functions SDK repo to be over in edgex-docs exclusively
  - Need to move ASC readme to edgex-docs as well
  - Create an issue for both
- CloudEvent type can be added as TargetType for ASC after CloudEvent conversion is supported
- TAF tests – sync with QA/Test group to get this effort started – specifically for Store and Forward - Lenny to talk w/ team
- Review the Board

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Hanoi Release Planning:

Application Services / App Functions SDK / Analytics Integration

New feature(s)

- Kuiper – next release
  - Decouple from EdgeX
- Deprecate Drools rules engine
- Support Cloud Event export - will be in for Geneva
- Support additional northbound endpoints and protocol types and formats. Examples include:
  - Tencent
  - Alibaba
  - IBM Watson
  - IoTivity
  - SAP HANA
  - DDS
  - AMQP
  - Haystack
  - OPC UA
- Support enrichment functions (an EAI concept) in export services (or application services). Allow additional data or information to be added to the flow of sensor data to the northbound side. This might be information about the sensor/device that captured it or information about the commands to actuate back down on a sensor/device. - Supported w/ any custom build App Service built on top of SDK
- Integrate to edge software/agents - w/ Data Plane
  - AWS Greengrass
  - Microsoft IoT Edge
- App Service Configurable – Allow same function twice
- Fork the pipeline?
  - Allow various paths for different sensors for example
- Support multiple topics in SDK - go mod messaging- update SDK config for support of this
- Multiplexor to split out data from device services - transform that breaks down an event with multiple readings into events with single readings
- Pipeline per topic +1
- 0MQ export function

Tech Debt

- Improve binary data support
  - Local edge analytics may be fed binary data and create intelligence from it to allow for actuation at the edge based on the binary data (example: examine an image an detect the presence of a person of interest).
  - Support alternate message formats for service-to-service exchange (Protobuf, XML, etc.)

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- ~~Update SDK to use new persistence service~~

New Items:

      All Good!

3/20/2020 Cancelled

3/13/2020
Attendees:
- Lenny
- Mike
- Jim

Topics:

- Anthony completed PR to message bus in SDK.
  - Now need to use that in a new profile for ASC.
    - Update the SDK in ASC
    - Add the Profile
- Jason fixed bug where Connect wasn't called.
- Review board: https://github.com/orgs/edgexfoundry/projects/23

New Business:

- Topics for Hanoi (brainstorming ideas)
  - V2 for SDK
  - Extended Kuiper Integration?
  - App Service Configurable – Allow same function twice??
  - Fork the pipeline?
    - Allow various paths for different sensors for example
  - Support multiple topics in SDK – go mod messaging
  - Multiplexor to split out data from device services
  - Pipeline per topic

3/6/2020
Attendees:
- Lenny

- Trevor
- Mike

Topics:

Rules Engine Recap from Yesterday -

Choosing Method A as opposed to B:

Interpretation: Pre-Filtering on device is removed from "EMQ X Stream" (option B) and is assumed to happen in AppFunctions or in where clause in "EMQ X Rule". *Topics aren't a means for filtering on devices or data in the stream.*

Event Stream Example: SELECT * FROM source WHERE device in ["Device1","Device2", "Device4"] AND temperature > 30

Provisioning/Onboarding Stream Example: SELECT * FROM source WHERE device in ["Device1","Device2", "Device4"]

Would like to be able update incrementally (I.e. add a new device to list "Device 8") - need clarity on whether this possible or if whole rule needs to be updated with complete list of devices. -- For phase 1 – will manage the whole list in the provision watcher and update rule when it changes.

//

Approaches for Kuiper stream definition in EdgeX

	a) Multiple devices in one stream (schemaless)	b) One device – one stream (schemaless)	c) One device – one strea (schema)
Stream creation	Yes, but only ONE pre–defined stream need to be created in the docker image. CREATE STREAM edgex() WITH (FORMAT="JSON", TYPE="edgex")	Need to create a stream with every device but not necessary to specify data types. CREATE STREAM demo() WITH (FORMAT="JSON", DATASOURCE="demo" TYPE="edgex")	Need to create a stream with every device, and spec necessary field types. CREATE STREAM demo (temperature float, humidity WITH (FORMAT="JSON", DATASOURCE="demo" TYPE="edgex")
SQL	SELECT * FROM edgex WHERE meta("device") = "demo" AND temperature > 30	SELECT * FROM demo WHERE temperature > 30	SELECT * FROM demo WHERE temperature > 30

Proposal is [a] or [b]
- [a]
  - As in relational database: All devices are in the same table, and distinguish devices by add a condition in WHERE clause.
- [b]
  - As in relational database: Create one table for one device. FROM clause distinguishes the device.
  - Higher efficiency: Data could be filtered at the 1st process node

[c] is not suggested
- The data types are already defined in va descriptors

EdgeX - Application Working Group

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

EdgeX - Application Working Group

Readme/documentation updated appropriately

Kanban Board Review

2/21/2020

Attendees:

LG Lenny Goodell (Intel) (Me)

JW Jim White

TC Trevor Conn

+Michael

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

EdgeX - Application Working Group

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:

EdgeX - Application Working Group

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
   -

EdgeX - Application Working Group

Attendees:

MJ Mike Johanson

(photo) 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

EdgeX - Application Working Group

- 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**

EdgeX - Application Working Group

1/17/2020

Attendees:

MJ   Mike Johanson (Me)

  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()

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

EdgeX - Application Working Group

1/10/2020

Attendees:

MJ Mike Johanson (Me)

ME 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

EdgeX - Application Working Group

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

EdgeX - Application Working Group

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

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- 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:

EdgeX - Application Working Group

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

EdgeX - Application Working Group

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

EdgeX - Application Working Group

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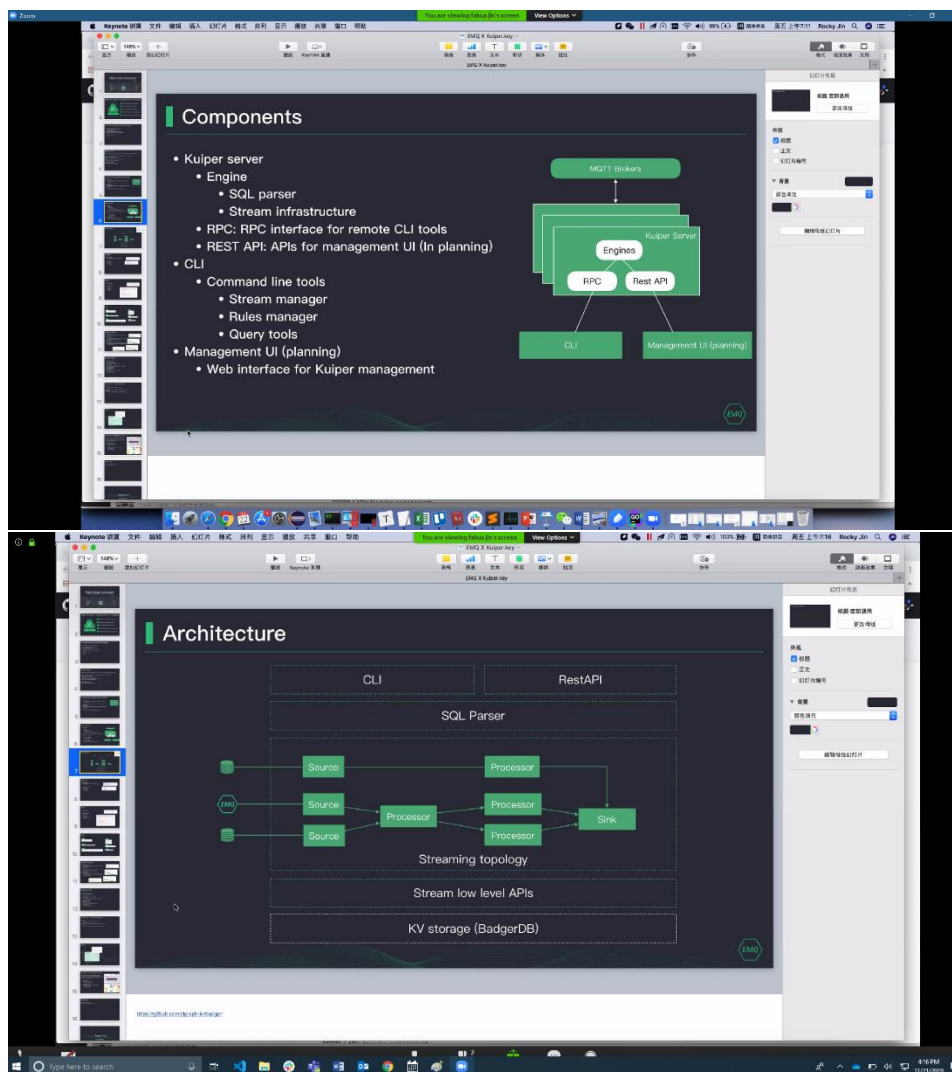
- o
- o Source = ZMQ, MQTT, etc...
- o BadgerDB current KV storage – currently too much memory looking to replace
- o

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

Fuji

11/15/2019

Attendees:

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)
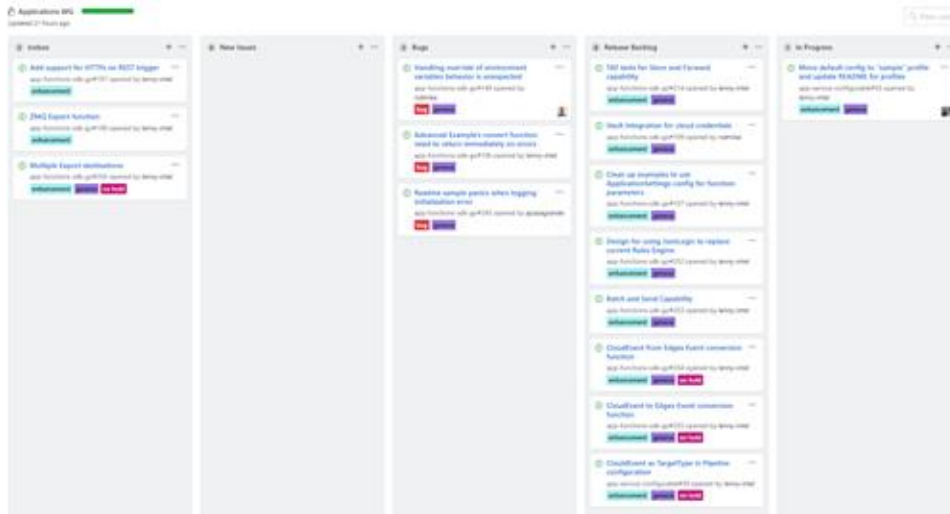
- Detailed discussion on Batch and Send
  - Consensus of concept of a Batch function
  - Discussion of in memory vs DB and designing for future scale out
    - Batched in memory by default. Use DB for durability (crawl). What about load balanced (Run)? Use semaphore in Redis?
    - Will require new DB 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

EdgeX - Application Working Group

- 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

EdgeX - Application Working Group

11/1/2019 Cancelled

11/8/2019 Cancelled – Geneva F2F Planning

EdgeX - Application Working Group

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

EdgeX - Application Working Group

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:
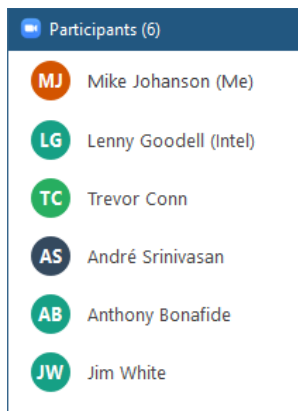
- Update all configurations to use Environment Variables to override for Docker
  - Lenny working on it
- Validate Version against Core Version (w/ option to disable)
- Blackbox tests for Store n' Forward TBD
  - Want to use TAF for this
- Geneva Items
  - Application services should provide for batch 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

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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:

EdgeX - Application Working Group

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:

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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

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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

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- **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

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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?

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

Opens?

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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)
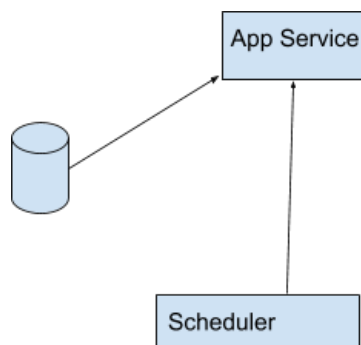
Questions/Opens:

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?????

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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?

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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

EdgeX - Application Working Group

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:

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- 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

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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

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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
  o 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.

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Edinburg

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.

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- 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.

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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?

EdgeX - Application Working Group

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

EdgeX - Application Working Group
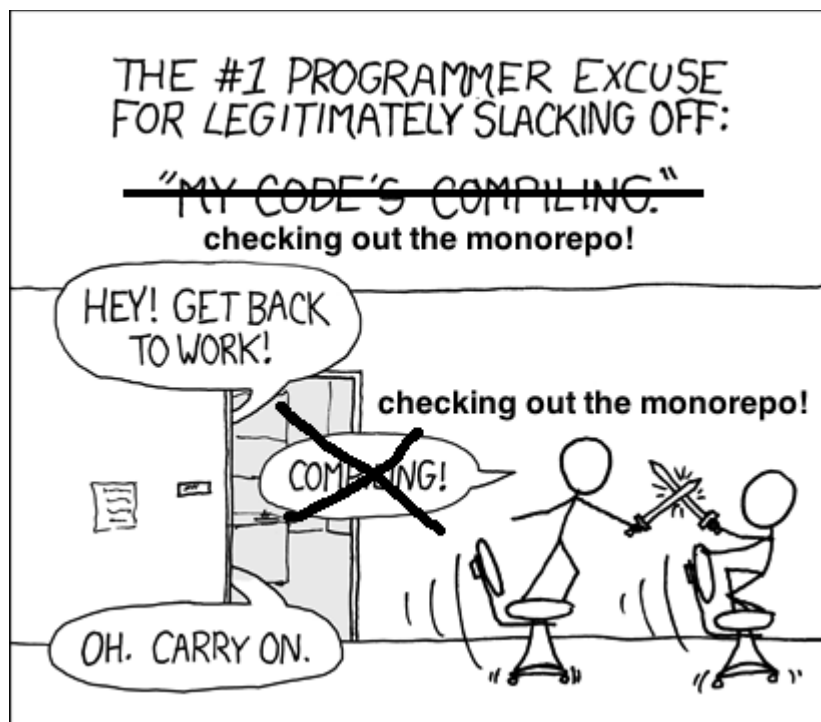
Any Bugs needing to be discussed?
Any Other Updates?

EdgeX - Application Working Group

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

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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.

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Any Other Updates?

None

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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

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Any Other Updates?