EdgeX Application Working Group 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?

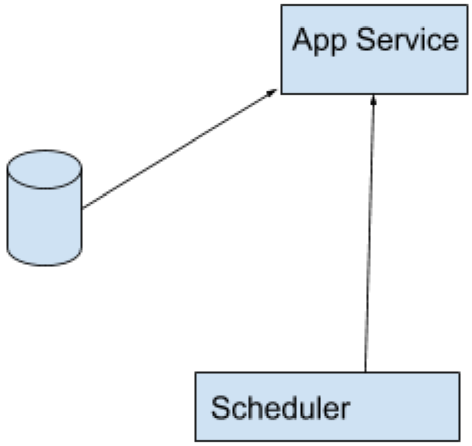
From Last Time:

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

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Create() - Store()
Retrieve() - RetrieveFromStore()
Update() - UpdateRetryCount()
Delete() - RemoveFromStore()

Example:

Filter
Compress - return value of this would be persisted
HttpPost

Topics from last time:

- 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