EdgeX Update

Monthly update to PRC EdgeX community

February 2021

TSC members here today

Lenny Goodell, Intel
Senior Soft Engineer
EdgeX Product Manager
TSC Member at large

Henry Lau, HP
Distinguished Technologist
Lead's EdgeX Vertical Solutions
LF Edge Governing Board and TAC member

Jim White, IOTech
CTO
TSC Chairman

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Agenda

- Quick 2 minute update on EdgeX 2.0/Ireland Release
  - Timeline and what it will include
- Lenny
  - The EdgeX V2 API set (why its important & how does it differ)
  - The EdgeX 2.0 Message Bus (how it works and why its important)
- Henry
  - Purpose of the Vertical Solutions Team
  - Adopter Series (what is it and why should present)
  - Open Retail Reference Architecture (a new project)

State of the release

- The next EdgeX release will be version 2.0

- Codename: Ireland

- Release Target: June 30, 2021
  - Freeze will be around the 9th of June

- Big features
  - The new V2 APIs
  - Message Bus between Device Services and Application Services
  - Improved UI (device service wizard, data visualization)
  - More Testing
  - New Device Services
  - Improved Security

- The fall release will be a minor "bug fix" release – stable release leading to Long Term Support (LTS)

Why?

- V1 APIs utilizes the internal data model objects
  - This is not good design because
    1. Leaks internal of the implementation
    2. Any internal model changes impact the API
- V1 APIs are specific REST protocol
- Some V1 models are very heavy
    - Device contains DeviceService and DeviceProfile, rather then referencing them
- ValueDescriptors are redundant and not updated when Device Profile is updated
- V1 APIs contain legacy naming inconsistencies
- Some V1 models contain unneeded properties

What?

- V2 APIs utilize Data Transfer Objects (DTOs) that are more streamlined
  - DTOs decouple the API from the internal implementation
  - DTOs designed to be protocol (REST, Messaging, etc.) agnostic
    - REST is still only protocol implementation
  - All APIs have a Response DTO providing a structed response to the requests
  - Adds & Updates have Request DTOs which wrap the request data
  - Device DTO use refences for DeviceService and DeviceProfile
  - Much more robust Validation done via annotation on DTOs
- V2 API Implementation is layered
  - Protocol (transport)
  - Application (logic)
  - Infrastructure (DB, etc)
- DeviceResource properties (aka ValueDescriptor) can be pulled from the DeviceProfile
- V2 API cleaned up some naming issues and removed unneeded properties
  - ProfileResource -> DeviceCommand
  - CoreCommad just minimized to Name, Get and Set properties
  - Reduced to one type of float encoding which is e-notation
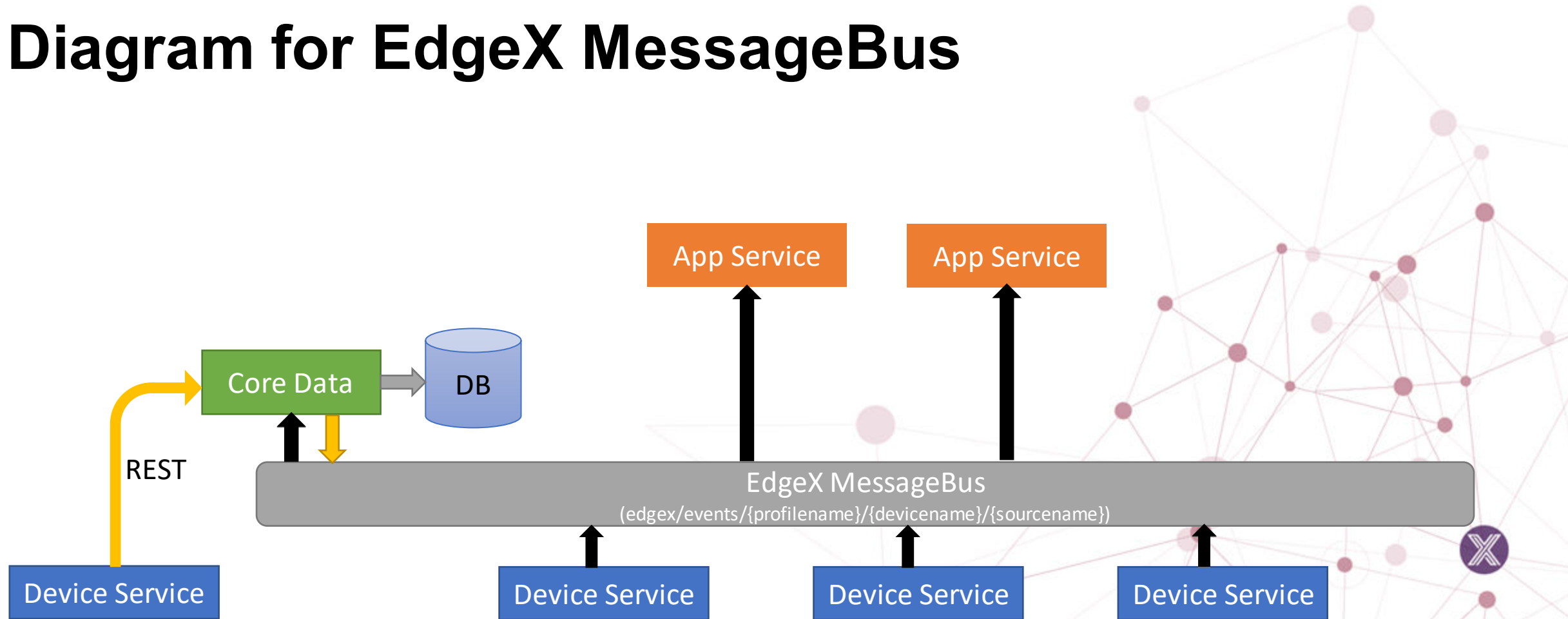 - Etc.

Edgex MessageBus

Whats new?

EdgeX MessageBus for Ireland Release

- The Message Bus itself is not changing.
  - Still have ZMQ, MQTT and Redis Streams implementations
- How it is used is being expanded
  - Device services will be publishing **Event/Readings** directly to the MessageBus
    - Requires MQTT or Redis Streams implementation for multiple device services
      - ZMQ doesn't allow for more than one publisher
    - Publishing will be the default but can be configured to POST to Core Data as is today.
  - Core Data will optionally subscribe to the MessageBus
    - For persistence only.
  - Publish topic has been expanded
    - New Topic format is **edgex/events/{profilename}/{devicename}/{sourcename}**
      - SourceName is the name of the source that created the Event (ResourceName or CommandName)
    - Allows subscriber to filter via subscriptions
      - For all events subscribe to **edgex/events/#**
      - For events for a specific profile subscribe to **edgex/events/{profilename}/#**
      - For events for a specific device subscribe to **edgex/events /#/{devicename}/#**
      - For events for a specific source subscribe to **edgex/events/#/#/{sourcename}**

Diagram for EdgeX MessageBus

EDGE X FOUNDRY™

App Service

App Service

Core Data

DB

REST

EdgeX MessageBus
(edgex/events/{profilename}/{devicename}/{sourcename})

Device Service

Device Service

Device Service

Device Service

EdgeX Vertical Solutions Working Group

- https://wiki.edgexfoundry.org/display/FA/Vertical+Solutions+Working+Group

- Mission:
    - Develop unique requirements and code contributions for respective markets
    - Feed requirements back into EdgeX core working groups to optimize core framework for many markets

- Charter:
    - Create sub category representing each vertical domain
    - List use case and requirements from each vertical domain
    - Define reference architecture model

- Archived projects: Oil & Gas, Smart Factory, Commerce

EdgeX Adopter Series

- https://www.edgexfoundry.org/ecosystem/adopter-series
- Discover why industry leaders use EdgeX
- Where/how EdgeX being used
- Future features to EdgeX wanted

February 23, 2021	IBM, Intel, HP – ORRA Project
January 19, 2021	IOTech
November 17, 2020	HP
October 6, 2020	Intel
August 25, 2020	TIBCO
July 28, 2020	Jiangxing Intelligence
July 14, 2020	ThunderSoft
June 30, 2020	Accenture

Open Retail Reference Architecture (ORRA)

- https://wiki.edgexfoundry.org/display/FA/Open+Retail+Reference+Architecture
- Project launched Jan 12, 2021 by IBM, Intel, HP

- Digital transformation in the Retail industry is accelerating
- Has taken new level of urgency from COVID-19 impacts
- Retailers must step up the digital game or face being obsolete
- Not just about on-line presence; in-store engaging experiences is important too
- New capabilities to be created/performed in the store "on-premise edge"

- Base components to start with:
    - EdgeX – middleware framework
    - Open Horizon – edge application management
    - Secure Device Onboarding – provisioning

TSC ?'s to the PRC EdgeX community

- How are organizations using Consul with EdgeX?

  - Do users in PRC make changes to configuration using Consul UI?

  - Are changes made during runtime?

- Would users in PRC like to make changes to device profiles at runtime?

  - Today profiles are static and can't change. Are there use cases for making changes?

- What types of protocols (sensors and devices) are you connecting most to EdgeX in production in PRC?

Thank you!!!

- Thank you for having us!
- Thank you for your amazing support, evangelism and adoption of EdgeX
- We look forward to being with you once a month
- If there is something in these updates that you would like to see or hear, please let us know

- Special thanks to Melvin Sun and Gavin Lu for getting this setup