EDGEXFOUNDRY™

TSC Meeting

May 15th, 2024

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Meeting Logistics

Time: Wednesdays 8am- 9am Pacific Time (Alternate Weeks)

Join from PC, Mac, Linux, iOS or Android: https://zoom.us/j/983155298

Or iPhone one-tap (US Toll): +14086380968,983155298# or +16465588656,983155298#

Or Telephone:

Dial: +1 408 638 0968 (US Toll) or +1 646 558 8656 (US Toll)

+1 855 880 1246 (US Toll Free)

+1 877 369 0926 (US Toll Free)

Meeting ID: 983 155 298

International numbers available: https://zoom.us/zoomconference?m=mkFexUxEcqHlvXHw53PqScTDRvS48PiQ

** TSC calls are recorded and added to Wiki post-call

EdgeX TSC Members

Working Group Chairs:

- Cloud Tsai (IOTech)   cloud@iotechsys.com   Core & Test/QA WG Chair
- Lenny Goodell (Intel)   leonard.goodell@intel.com   Applications & Analytics WG Chair
- Lindsey Cheng (IOTech)   lindsey@iotechsys.com   Device Services WG Chair
- Ernesto Ojeda (Intel)   ernesto.ojeda@intel.com   Dev Ops WG Chair

At Large Members:

- Farshid Tavakolizadeh (Canonical)
- Corey Mutter (Eaton)
- Elizabeth Lee (Intel)
- Melvin Sun (Intel)
- James Butcher (IOTech)
- Darryl Mocek (Oracle)

Current quorum = 6 members

Note: Quorum for TSC meetings requires at least fifty percent of all voting members of the TSC to be present. The TSC may continue to meet if quorum is not met, but will be prevented from making any decisions at the meeting. Except as provided in Section 7.c. and 8.a, decisions by vote at a meeting require a majority vote of those in attendance, provided quorum is met. Decisions made by electronic vote without a meeting require a majority vote of all voting members of the TSC.

Today's Agenda

- Working Group Updates
- Odessa Deliveries Summary

Work Group Updates

Chairs

Working Group Chair Updates

- Around the working groups:
  - **Product Manager** - Cloud Tsai
  - **Applications** -
  - **Core** - Cloud Tsai (co-chair Melody Liu)
  - **Device Services** - Lindsey Cheng (co-chair Felix Ting)
  - **DevOps** -
  - **Release Czar** - Cherry Wang
  - **Outreach and Marketing**
    - **Certification** - Rodney Hess
    - **China Updates** - Melvin Sun
    - **LF Edge TAC** - Brad Corrion

Product Manager - Odessa

Icebox (1)

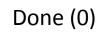- Lite Builds (no security features) via Build Tags

Backlog (3)

- **URIs For Files**
  - C services - **TBD**
- **OpenBao**
  - **Initial alpha testing - DONE**
  - **Full testing with GA - TBD**
- **Go 1.22 (Feb'24) and Alpine 3.19**
  - **Released!!**
    - **https://tip.golang.org/doc/go1.22**

In Progress (4)

- **Odessa Doc Refactoring**
  - Device Services
    - Device Commands - **DONE**
    - Device Definitions - **DONE**
    - Auto Events - **DONE**
    - BacNet - **TBD**
    - COAP - **TBD**
    - RFID LLRP - **TBD**
    - SNMP - **TBD**
    - Virtual - **TBD**
  - Refactor APIs Section - **TBD**
  - Refactor Security Section - **TBD**
  - Update EdgeX Diagram - **DONE**

- **Compiler flags to Strip Debug Info**
  - edgex-go - **DONE**
  - edgex-ui - **TBD**
  - App SDK and ASC - **DONE**
  - App LLRP & App Record Replay - **TBD**
  - Device SDK and Device Services used by TAF - **DONE**
  - Remaining Device Service - **TBD**

- **Zero Trust (OpenZiti)**
  - go-mod-core-contracts - **DONE**
  - go-mod-bootstrap - **DONE**
  - edgex-go - **DONE**
  - edgex-ui - **DONE**
  - ekuiper - **DONE**
  - edgex-compose - **WIP PR waiting for smoke test**
  - docs - <mark>**WIP**</mark>
  - edgex-helm - **TBD?**

- **Core Keeper - WIP**
  - go-mod-core-contracts - **DONE**
  - go-mod-registry - **DONE**
  - go-mod-configuration - **DONE**
  - edgex-go - <mark>**WIP PR waiting for review**</mark>
  - edgex-compose **- TBD**
  - docs - **TBD**

Done (0)

-

Applications WG Update

Newly Completed (<mark>0</mark>)

Newly added (<mark>0</mark>)

WIP (0)

Done for Odessa (<mark>16</mark>)

Backlog (<mark>3</mark>) https://github.com/orgs/edgexfoundry/projects/50/views/2

ICE BOX (0)

Next

- Compiler flags to Strip Debug Info
- Document Commands via MessageBus for App Services

eKuiper

- Latest is 1.12.7
  - https://github.com/lf-edge/ekuiper/releases/tag/1.12.7
- 1.13.0 releasing this week.
  - https://github.com/lf-edge/ekuiper/milestone/23
  - zero-trust will land in patch of 1.13

<mark>Project Board</mark>: https://github.com/orgs/edgexfoundry/projects/50/views/2

Next meeting **TBD**

Application Services - Napa

Functions (built into SDK)

- Add Tags
- Batch
- Compression (GZIP & ZLIB)
- Conversion (XML & JSON)
- EventWrapper
- Encryption (AES256)
- Export
  - MQTT
  - HTTP POST & PUT
- Filtering
  - By Profile Name
  - By Device Name
  - By Source Name
  - By Resource Name
- JSONLogic
- Set Response Data
- ToLineProtocol (transforms Metric DTO)

Features

- Store and Forward
- Batch and Send
- Web Server
- Configurable App Service
- Vault Integration for Secrets
- MQTT Event triggers
- Filter by Topics
- Custom Triggers
- Publish Topics and URL Placeholders
- Structure Custom Configuration
- ~~Background Publishing~~
- Direct Publish to MessageBus

- Received Topic
- Context Storage
- Service Metrics
- Clients
  - Logging, Event
  - Command
  - Device, DeviceService
  - DeviceProfile
  - Notification
  - Subscription
  - Registry

Reference/Example App Services
(built on top of SDK)

Released Services
- App Service Configurable
- App RFID LLRP Inventory
- App Record and Replay

Examples
- Simple Filter
- Simple Filter and MQTT Export
- Simple Filter and HTTP Export
- Simple CBOR
- Cloud Export

- Cloud Event Transformation
- Secret Retrieval
- JsonLogic
- Send Command
- Convert & Publish
- Custom Target Type
- IBM Watson IoT (ASC Profile)
- Custom Trigger
- Influx DB & Flege Exports
- Camera Management

Core WG Update (May 15 2024)

❖ TAF - Performance 1 test failed - still investigating. startup time related

❖ Core/QA Progress

➢ QA

■ [Done] Upgrade compose version to 26.0.1 for all the tests #890

■ [Done] Update threshold value to 1.3 for images size for performance test #894

➢ Core

■ [WIP] Add Core Keeper Service #4783

■ [WIP] [Core Metadata] Add "parent" field to Device objects #4769

■ [WIP] [Zero Trust] Docs started #1351

■ [Done] feat: update build-canned #443

■ [Done] Add option to bypass validation for POST Device API #4789

❖ Note

➢ v3.1.1 patch release - The following repositories have been updated to use the latest dependencies for resolving CVEs

■ edgex-go, device-sdk-go, app-functions-sdk-go, device-modbus-go, device-virtual-go, app-service-configurable

➢ DB replacement for Redis is in discussion…

Next meeting: Tuesday May 28 2024 @ 5 PM Pacific Time

Database replacement options: centralized database

Name	x86 image size	TLS support	Memory Usage	Golang Driver
Firebird	203MB	Yes (after 3.0)	10.77MiB	Poor
Cassandra	354MB	Yes	2.136GiB	Yes
OrientDB	423MB	Yes	281.9MiB	Poor
PostgreSQL	431MB	Yes	23.4MiB	Good
Timescale	368MB	Yes	78.04MiB	Good (same as PostgreSQL)

Database replacement options: embedded database

	BadgerDB	NutsDB	Pogreb	RoseDB	DuckDB	SQLite
type	key-value	key-value	key-value	key-value	SQL	SQL
Image size	23.2MB	12.8MB	14.5MB	12.5MB	48.9MB	17.8MB
Encryption	V doc	✖	✖	✖	✖	✖
Batch	V	V	V	V	V	V
License	Apache-2.0	Apache-2.0	Apache-2.0	Apache-2.0	MIT	SQLite Pro Support

OpenBao Project (Vault Replacement for EdgeX)

- OpenBao is now a formal LF project, as announced at LF ONE Summit conference
- Website: https://openbao.org/
- Docs: https://openbao.org/docs/
- Alpha release available: https://github.com/openbao/openbao/releases/tag/v2.0.0-alpha20240329
    - Initial tests verify it works with EdgeX :)
    - Awaiting GA release for us to use in a release - expected June
    - Note GA currently not expected to feature a UI - but not required by EdgeX
    - Still requires documentation and more testing

- James is EdgeX contact for OpenBao and TSC member
- Nathan Phelps (IBM) voted as TSC Chair
- Project meetings are weekly (Thursday @ 8am Pacific Time for 30 mins)
- https://wiki.lfedge.org/display/OH/Hashicorp+Vault+Replacement+Feature+Design+Candidate

Device Services WG Update (15 May 2024)

- **Share Session**
  - How EdgeX integrates with OpenZiti (from Clint) - **Q&A Session**

- **Completed issues**
  - [Done] device-mqtt-go: Unclear error message when primaryTable is misstyped or unsupported [#548](#)
  - [Done] device-opc-ua: OOM will occur when large amounts of data are collected [#670](#)

- **No in progress issue**

Next meeting: Tuesday, May 21, 2024 @ 5 PM Pacific Time

Device Services - current/coming (as of v3.1)

Open Source connectors:

- Modbus (TCP + RTU) in Go
- Virtual Device in Go
- SNMP in Go
- MQTT in Go
- BACnet (IP + MSTP) in C
- ONVIF Cameras in Go
- USB Cameras in Go
- REST in Go
- CoAP in C
- LLRP / RFID in Go
- GPIO in Go

Open Source connectors (Future):

- UART in Go
- Siemens S7 in Go

IOTech commercial connectors:

- Modbus (TCP + RTU)
- BACnet (IP + MSTP)
- OPC-UA
- BLE
- Zigbee
- GPS
- CAN (+ J1939 Extensions)
- EtherCat
- EtherNet/IP
- Siemens S7
- PROFINET
- WebSockets
- MQTT
- REST
- ONVIF
- USB Cameras

DevOps WG and Release Czar

- V3.1.1 patch release for resolving CVE is working in progress

- V3.2 Release Date. Initially planned for May 2024, we need to make a decision
    - Neither OpenBao, Core Keeper or Zero Trust are ready yet (fundamental deliverables)
    - All require more development, testing and docs
    - Redis also recently changed its license terms. EdgeX DB discussions underway for that
    - Reduced community resources and a new Release Tsar in place impacted our
    - -> all suggests the 3.2 delivery should be pushed back
- James: Recommend 3.2 should be targeted for Nov/Dec
    - A lot of change in this release
    - Allows time to thoroughly complete and productize the items
    - Allows option for possible Redis DB updates during that time
    - The last release was LTS so EdgeX users still have a strong and stable platform right now

Odessa Deliveries Summary

Theme / Title	In Scope	Priority	T-Shirt	Notes
Replace Hashicorp Consul with EdgeX-Core-Keeper WIP	✔	High	L	Work to update/review/approve core-edgex-keeper (code, docs, tests). Owner: IOTech and Eaton
Replace Hashicorp Vault with Open-Bao Alpha looks good. Need surety on full preview and requires testing and documentation time	✔	High	S	Liaise with Open-Bao group for delivery timing but expecting to be drop-in replacement. Only docker-compose changes needed
Zero Trust / Secure Distributed EdgeX (OpenZiti Integration) WIP	✔	High	M/L	ADR (now approved). Impl largely by Clint
Continue EdgeX Documentation redesign WIP	✔	High	M/L	Device Services, Security and API section
URI for Files - Parity for C Device Services SDK Out	✔	High	S	Implementation is clear. Owner: Felix. Assistance and reference impl from Elizabeth (Go)
Modelling & Relationships – Virtual Device Resources Deprioritised by Eaton	Now Out	Med	S	Limited to Device SDKs and Metadata. Owner: Eaton
Modelling & Relationships – Protocol Info in Device Definitions Out	✔ (UCR)	Med	S	UCR owner Oracle. ADR & Impl TBC
Modelling & Relationships – Device Functions Out	✔ (UCR)	Med	S	UCR owner Oracle. ADR & Impl TBC
Modelling & Relationships – Parent/Child Devices Eaton WIP	✔ (STRETCH)	Low	S	Limited to Metadata. Owner: Eaton. Progress via attending Devices WG. Does a UCR need to be updated here?
Modelling & Relationships – Device Metadata in Provision Watchers Out	✔ (STRETCH)	Low	S/M	Limited to Device SDKs and Metadata. Owner: Eaton
NanoMQ – Add security to our NanoMQ option Out	✔ (STRETCH)	Low	S	Continue communication with EMQ team

Outreach and EdgeX China Update

- As a Stage 3 LF project, EdgeX Foundry has "discretionary funds" available to utilize as we see fit
  - Aim is to help the project grow and be sustainable
  - Up to $10,000 per year Jan-Dec, no rollover
  - English and Chinese website: $3660.17 this year
  - Not planning EdgeX awards this year
  - -> $6339.83 remaining for 2024.
  - Open to ideas and suggestions from the TSC for utilizing these funds - marketing, events, etc
- No EdgeX China Update today

Thank You