EdgeX Planning Conference
Action Items and Final Scope List

Kamakura Release
Nov 1-4, 2021
Jakarta Items

- CORs enablement needs to be documented with information on how to pick/select secure (Kong) or unsecure CORs enablement
  - Jim to create doc issue (Done ✓)
- One more update to Bootstrap
  - Lenny (Done ✓)
- App service AES problem
  - Leave old transform in place to keep backward compatibility
  - Have fix in place that people an opt to use (Done ✓)
  - New feature to be merged (Bryon and Lenny and Alex) (Done ✓)
  - Bryon will publish CVE once we have remediation in place
  - Issue for docs created (pending PRs)
- New issue in Provision Watcher (Lenny discovered)
  - Watcher is trying to pull it from cache when it is has not been added there
- Docs
  - Need binary data sending/consuming example (Jim to create issue) (Done ✓)
  - Jim/Lenny to clean up Jakarta docs project board; determine what is in scope (Done ✓)
  - URLs in repository READMEs and TOML files point to different versions (Jim to search and create issues or fix)
  - Add and improve device service docs (Iain to lead discussion about what is needed in next DS WG meeting)
  - Getting started guide – possibly replace HiveMQ with EMQ Xbroker (Jim to explore; create issues as necessary)
  - Take care of to-do in GUI with Snaps (https://docs.edgexfoundry.org/2.1/getting-started/tools/Ch-GUI/#snaps) (Tony & Canonical to work)
## Jakarta Manual Testing for LTS

<table>
<thead>
<tr>
<th>Test</th>
<th>Owner/Actions</th>
</tr>
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<tbody>
<tr>
<td>Test any configuration not already handled by new TAF tests</td>
<td>• Persistence on/off (running without core data and with persistence = false pass through) may be covered</td>
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<td>• DS REST vs Message Bus (Redis) – test REST with Virtual DS</td>
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<td>• Test CORS support – check headers there if enabled (both ways secure/non secure)</td>
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<td>Jim Action</td>
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<tr>
<td>Test reboot of the system. Make sure EdgeX can come back up</td>
<td>Containerized - <strong>Lenny Action</strong></td>
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<td>Snap reboot test – <strong>Tony Action</strong></td>
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<td>Test device services (with real hardware where possible)</td>
<td>Test something that uses C SDK</td>
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<td>Bacnet update – simulator - <strong>Iain Action</strong></td>
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<td>Modbus, SNMP, GPIO – real device – <strong>Jim Action</strong></td>
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<td>CoAP, RFID, Grove – in process of port to V2; address when ported</td>
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<td>Working with service authors to identify minimal tests</td>
<td>Start requiring contributions of DS to include this</td>
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<td>Kamakura task – add MD page to each DS (create issues – <strong>Jim Action</strong>)</td>
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<tr>
<td>Test different combinations/permutations of app functions in app services</td>
<td>MQTT and HTTP export are important ones – covered TAF</td>
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<td>Use sample config to drive this – <strong>Jim Action</strong></td>
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<tr>
<td><strong>Test on Windows Native</strong></td>
<td>Kamakura Arch topic</td>
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<tr>
<td>Test running with multiple services of same type (device service and app services)</td>
<td>App service – done in TAF</td>
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<td>DS – should be done in all; not a blocker</td>
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<td>Generic test – 2 DS running simultaneous</td>
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<td><strong>Jim Action</strong> – try MQTT, Modbus</td>
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</table>
Jakarta LTS Documentation

• Agreement by community about what is included in LTS
  • All edgex-go services (core data, metadata, command, support scheduler, notifications) – v2.1
  • App functions SDK v2.1
  • App service configurable v2.1
  • Device Service SDK Go v 2.1
  • Device Service SDK C v2.1
  • Device services v2.1s (virtual-go, modbus-go, snmp-go, rest-go, mqtt-go)
  • Not included in LTS
    • LLRP app service and device service
    • SMA (executor and agent) – with caveat
      • The system management services were deprecated with the Ireland. Should a significant issue (critical or high level issue) be discovered on the system management services and a fix to the issue has been created, the community will include the fix with any other LTS patch release. However, a fix to a system management service will not trigger an LTS patch release alone.
    • device-camera-go but we will have one for 1st quarter 2022 (either replacement or improved current)
    • device-gpio, device-grove-c, device-bacnet-c, device-uart-c, coap
    • GUI/CLI tools are dev tools – not included officially in LTS
      • Best effort to keep these compatible, but they are use at your own risk

• Place these details on the LTS wiki page - Jim action item to create page and reaction for TSC
  (Done)
Jakarta Release LTS / 2.1.0

Start Date: October 27th, 2021

**Week 1**
- October
  - mon: 1, tue: 2, wed: 3

**Week 2**
- November
  - wed: 4, thu: 5, fri: 6, sat: 7, sun: 8
  - mon: 9, tue: 10, wed: 11

**Week 3**
- Code Freeze
- Update Documentation, Compose Files and Bug Fixes
- GitHub Issues: Close / Mark for Ireland
- Testing on 'main'

**Week 4**
- Pin 3rd party app versions to patch level
- Update edgex-global
- Update SwaggerVersions
- Create Release YAML
- go-mods Release (Tagging)
- SDK Release/Tag:
  - app-functions-sdk-go (v2.1.0)
  - device-sdk-go (v2.1.0)
  - device-sdk-c (v2.1.0)
- Update go.mod for:
  - device-services
  - app-services
- Merge Release YAML
- Publish Docker Image Overviews
- Tag TAF Tests
- Update edgex-compose
- Update EdgeX Docs
- EdgeX Ireland Release

**Community**
- Kamakura Release Planning
Kamakura Release – General Themes/Objectives

• Version 2.2
  • Must still be backward compatible
  • Can add, but not remove deprecated items yet
  • Not LTS, but must consider we have LTS now on the books

• Major additions under consideration
  • Improved security secrets seeding and allowing for delayed service starts
  • Initial North to south message bus
  • Metrics collection
  • Dynamic device profiles (changes to device profiles)
  • Better (native) Windows support
  • Improve testing (including first real hardware testing)
  • V2 of the CLI
Business and Outreach

• Web site
  • No major changes to the site (English or Chinese) for next release
  • Looking to move costing to LF/LF Edge (Jim action to work with LF)
    • Find out situation with funding/costs on Chinese site (Jim action) (Done ✓)
  • Goal: get more stats from Chinese site, docs, Wiki
    • Try to understand what is driving traffic to any of these

• Developer Evangelism
  • EdgeX Ready – evangelism/marketing social media campaign – Rodney/Jim action
    • Participation an results from EdgeX Ready will determine what comes next
  • Developer Badging – kick off with Jakarta release
    • Ernesto to demo at next DevOps
    • Need marketing campaign at time of the release – Jim action
  • EdgeX Smart * Challenge 2022
    • Need sponsors – Jim action

• Adopter series
  • Hold more ad hoc than try to do it monthly
  • Create separate Wiki page to highlight this series and the recordings from it – Jim action

• Events/Shows – on hold until spring 2022
• Regular blog/vlog – shooting for something every month – Jim action
Cadence Check

• April & Oct/Nov remain target release months
  • Kamakura release – May 2022
  • Levski release – Oct 2022
  • Minnesota release – May 2023
  • Napa release – Oct 2023 (thank you Ernesto)

• Looking to hold next planning meeting (Levski planning) as face-to-face in April 2022
  • Revisit in Q1 2022 as companies emerge from Covid protocols
  • Looking for organization willing to host

• No changes in work group meeting times
  • However – the calendar meetings need to shift for standard time (because they are all in UTC).  Jim action item.
Tracking project decisions

• Use permanent project board in Github
  • Use cards or issue (issue if code action/PR is needed)
  • All decisions covered (small to large)
    • Large and “significant architecture” changes also have an ADR
  • WG leads have action to update the board with any/all WG decisions
  • Column per release (but never take down or archive the columns)
  • Check to make sure all WG leads have access to add/make changes
• **Jim** action to draft Wiki document on this approach for TSC review
  • Setup project board in Github
Release Timing

• Move planning meeting to week following the release
• Generally attempt to select release date about 2 months in advance of the release
  • Typically early March and early September for spring/fall releases
  • Release date preferred to have be a Wednesday
  • Adjust per circumstances and TSC review
• Release schedule for minor release
  • Freeze date 2 weeks in advance of release date
  • Prewire, Thursday prior to freeze date
• Release schedule for major or LTS release
  • Freeze date 3 weeks in advance of release date
  • Prewire, Thursday prior to freeze date
• Planning meeting – generally the week following the release
  • Virtual meeting: Monday – Thursday with Friday for training/non-conference
  • In person: Tuesday-Thursday with Thursday afternoon for training/non-conference

• Jim to create Wiki page outlining the above
# Formalized Planning

## Example Calendar for Major/LTS Release

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- **Release date**: 27th
- **Freeze date**: 20th
- **Pre-wire Planning Meeting**: 24th

## Example Calendar for Minor Release

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General Action Items

• Research alternatives to big 3rd party enterprise components (Kong, Vault, Consul)
  • Tyk, Consul API Gateway, NginX, ...
• Check poor 3rd party dependencies for any updates/better support
  • Jim action
• What is required to trigger performance tests from edgex-taf?
  • Is this already being done?
  • James action
• Call help wanted on record and replay feature
• Have conversation with eKuiper team
  • Steer eKuiper to offer a separate credentials file (versus their general configuration file)
  • Lenny action
• Jim to update Wiki Backlog and Github issues with status of decisions per pre-wire and planning meeting
Add to Monthly Architect’s Meeting discussion list

• *In addition to ADRs currently in scope*
• Support device/sensors that have a functional protocol / API
  • Discuss how to start and where work originates
• Global configuration
  • Should be covered and decided before next major release cycle
• Securing the EdgeX message bus when using MQTT implementation
  • How to generate credentials and tell the services about these
  • How to initialize the MQTT secrets for the internal message bus comms
Items to add/move/return to the backlog

- Control plane events
  - Needs a new ADR but may not be covered in this release
  - This may change in regard to the Eaton requirements (TBD)
- Move Command API (and functionality) into metadata service
- Offer Windows artifacts (MSI, exe, ?)
- Global configuration
- EdgeX size concern (diet plan for 3rd party components to include Kong, Vault, Consul)
- SMA alternatives/replacement
- Improved and expanded support notifications
- Replace poorly supported 3rd party libs
- Prometheus integration

- Record and replay
- Handle both JSON request bodies as well as CBOR request bodies in commands to DS
  - For Go; already done in C
- DS Filtering
- CloudEvent as TargetType
- Secure MQTT message bus (for internal communications)
- Use existing instance of Vault (bring your own Vault)
- Integrate GoKart security scanning (specific to Go Lang)
Kamakura Scope
General/Cross Cutting Concerns Scope

- Dynamic Profiles - [https://github.com/edgexfoundry/edgex-docs/pull/605](https://github.com/edgexfoundry/edgex-docs/pull/605)
  - Owner: architects/global to start
  - T-shirt size - medium
  - Finalize and approve ADR by end of year
  - “Make law”/enforce in the code during the release
    - Validation to occur in metadata
    - CLI, GUI, etc. won’t have to validate, but will have to react to errors

- Metrics Collection - [https://github.com/edgexfoundry/edgex-docs/pull/268](https://github.com/edgexfoundry/edgex-docs/pull/268)
  - Owner: architects/global to start
  - T-shirt size – large
  - Finalize and approve ADR by end of year
    - ADR needs to look at lib/package for Go and C
    - ADR needs to cover configuration to turn on/off use of metrics
    - Does not include control plane events
  - Implement in Go services this release; research options for C services (design by end of release)
    - go-metrics already a dependency incorporate in Go code
    - May need feature flag for compile time incorporation (should be covered in ADR)

- UoM - [https://github.com/edgexfoundry/edgex-docs/pull/386](https://github.com/edgexfoundry/edgex-docs/pull/386)
  - Owner: shared Core/Device Service task
  - T-shirt size – small for ADR; impl TBD
  - Complete and approve ADR by end of January 2022
  - Implementation a stretch goal but TBD after ADR
    - Validation not covered in ADR or impl
General/Cross Cutting Concerns Scope

- North-south message bus
  - Owner: architects/global to start
  - T-shirt size – small for ADR; impl large or x-large
  - Complete ADR in this release cycle
  - Stretch goal:
    - Implement MQTT subscription in command service
    - Implement DS’es with subscription capability (via Go and C SDKs) to start receiving commands from command service via message bus

- Kubernetes support
  - Owner: PM/TSC chair task
  - T-shirt size – small for research and doc; medium for impl
  - Get feedback from K8s experts
    - What doesn’t work? What is insufficient with current examples and documentation
  - Create a page in the EdgeX docs
    - EdgeX is not CNCF but edge native. Cover why EdgeX is not HA, how to scale EdgeX (out not up), why EdgeX doesn’t work in a cluster, limitations of EdgeX in K8s (like devices/sensors impact).
  - Based on expert feedback, create improved edgex-example or possibly even 1st level artifacts (like docker-compose and snaps)

- Zero touch provisioning
  - Owner: PM/TSC/Canonical chair task
  - T-shirt size – small for research
  - Research project – what do adopters want/need? What does zero touch mean to them
General/Cross Cutting Concerns Scope

• (Native) Windows support
  • Owner: PM task
  • T-shirt size medium
  • Research / test Go compile direct to not include/compile ZMQ
    • Use zmq linux files special names that don’t include them
    • Additional work pending success and review of this approach

• Support device/sensors that have a functional protocol / API
  • Owner: DS and Core WG task
  • T-shirt size – small for ADR; impl out of scope for this release
    • Impacts Command and device services
  • Example: ONVIF – camera has a SOAP based web service; function call that takes multiple parameters
  • Supporting REST vs SOAP or GRPC calls
    • Modeling we have is not up to the task to support these more complex function calls
  • Research and discuss this feature prior to ADR development in Monthly Architects Meeting
    • Discuss how to start and where work originates
  • Create ADR in this release if architect’s concur
    • Avoid inventing something from scratch if we can
    • Potentially some research prior to ADR
    • Discuss in architecture group about how to start and where work originates
General/Cross Cutting Concerns Scope

• Upgrade Go (1.17)
  • Owner: smoke test: Core/James, apply across services: DevOps/Ernesto
  • T-shirt size medium
  • Do in December
• Add "make lint" target and add to "make test" target (only for GO)
  • Owner: Jim/Lenny
  • T-shirt size: medium; roll out as we can through the release period
  • https://github.com/edgexfoundry/go-mod-secrets/issues/129
  • Needs to be done in mods and DS SDKs and DSs, LLRP AS
  • Based on what the lint tool finds, could add to scope of work to all services
Core Scope

- Always send CBOR option for performance
  - T-shirt size: medium
  - Test first and apply if it makes sense
    - Run functional tests at the same time to make sure we are not breaking something
    - What would “significant” savings look like: >100 milliseconds
- Update lastConnected should not trigger device service callback
  - T-shirt size: small – tech debt we need to clean up
- Refactor the pkg.Encode func name
  - T-shirt size: small - tech debt; just need better naming
- Research move to typing in JSON (Impl stretch)
  - T-shirt size: small to research; impl TBD
  - Protocol properties; not just internal because of provision watcher
  - Tech debt to use interfaces vs string:string in properties
  - Complexity - using the string match on provision watcher
- ADR for addressing support of specifying parent/child relationship
  - Owner: Eaton
  - T-shirt size: small
  - Use of labels vs use of custom attribute in device object

- Add new tests to address any new features
  - T-shirt size: TBD
- Test with Core Data not in place
  - T-shirt size: ?
- Test send of sensor data from DS via REST (vs message bus)
  - T-shirt size: ?
- Test that data successfully comes back from eKuiper
  - T-shirt size: ?
  - Coming with eKuiper 1.4
- Define what other stress testing we need
  - T-shirt size: small
  - Implementation may be in scope
- Test Redis use of memory
  - T-shirt size: ?
  - Test Redis in memory database and how much can we persist
  - What’s the breaking point?
- Real hardware testing
  - Owner: Jim
  - T-shirt size: small for pilot
  - Research setting up accessible hardware in LF Edge Lab
  - Understand CI/CD implications
  - May be manual testing to start
Core GUI and CLI Scope

• GUI
  • Fix to no allow banned activity (ex: modify device profile)
    • T-shirt size: small
    • To be handled after we address dynamic profiles
    • Don’t validate in the GUI, just react to API call responses
  • Add testing
    • T-shirt size: large – impacts GUI team, testing team & possibly DevOps
    • What tools to use?
    • How much is automated versus manual

• CLI
  • Complete V2 implementation and update docs
    • T-shirt size: ?
  • Support app and device services - stretch
    • T-shirt size: ?
  • Scrub issues list - stretch
    • T-shirt size: ?
  • Support registry and proxy setup going through API Gateway – stretch
    • T-shirt size: medium; concern on what is covered via “registry” access in CLI
    • Research first
    • Likely to complete only one of these at best
Device Service Scope

- C SDK work outstanding
  - T-shirt size: medium to large
  - Complete securing consul with access tokens
  - Complete securing the message bus
  - Secret provider for all
- BACNet DS (in C)
  - T-shirt size: small to medium
  - “Not as far to go as we thought”
- CORs support in C SDK / C device services
  - T-shirt size: medium (due to no library support)
  - Lower priority for this WG – therefore a stretch goal
- Research / ADR on use of cmake options to optimize dependencies
  - Owner: Eaton
  - T-shirt size: small
  - CBOR, MQTT – conditional compiles to minimize size of DS executable; so as to not include stuff they are not using
- Update/Upgrade to use Yaml v3 library
  - T-shirt size: small
  - Tech debt, needed for code hygiene
- Implement ProtocolProperties validation mechanism
  - T-shirt size: medium
  - Crawl first – callback defined in Metadata; way for the device service to set it
  - Endpoint on DS SDK to be passed device information
  - Metadata to start calling it
  - Involves both Go and C SDKs and services
- Assist in implement ADR 0019 - Delayed start secret store tokens
  - See Security Scope
- Approve/Accept new DS
  - CoAP, GPIO, UART, Grove
Application Services Scope

• Research how to provide your own custom function that gets called in/from the pipeline
  • T-shirt size: small
  • Via nano message vs MQTT vs ?
  • Protocol of choice to be determined
  • Compare this to just another AS

• Research CloudEvent library
  • T-shirt size: small to research
  • If still big, push onto backlog
  • If smaller, explore AS export with CloudEvents (TBD size)
Security Scope

• Implement ADR 0019 - Delayed start secret store tokens (SPIFFE ADR)
  • T-shirt size: large; cross cutting concern that will take most of the cycle to implement
  • https://github.com/edgexfoundry/edgex-go/issues/3773
  • Need to get the ADR done in early Dec
    • Need GRPC clarification (requirement in C) in SDK
    • Bryon – research whether GRPC is needed for this solution (for impact on C side)
      • See https://grpc-c.lixiangyun.top
  • Important for enabling Kubernetes
  • Built to be opt-in (in Kamakura – only DS and AS take advantage of it)
  • Probably a common library everyone uses
  • Another C SDK dev need

• Update docs and edgex-examples
  • T-shirt size: medium; some work to determine how to do this in secure mode
  • Update SSH Tunneling for remote Device Service how to for V2
    • https://github.com/edgexfoundry/edgex-docs/issues/515
  • Update Swarm for remote Device Service how to for V2
    • https://github.com/edgexfoundry/edgex-docs/issues/516

• Doc how to use SPIFFE as example of how to do distributed services in edgex-examples
  • T-shirt size: medium – stretch for Kamakura
Snap Scope

• “Under the hood work”
  • Updating the basis for core 22
  • Set env vars via Snap CLI (today we map between env names to snap lowercase names)
  • Research – separate eKuiper into separate snap (eKuiper not actively maintaining their snap)

• Add github action to build full snap when changes made to all snaps
  • T-shirt size: medium
  • Process outside verification pipeline
  • Branch protections?
  • Need it for all the snaps not just edgex-go
    • Device services (work in progress)
    • LLRP, config AS
  • Parallel workflow
  • Review by DevOps (to make sure CI pipeline isn’t broken by it)

• EdgeX GUI will be made a separate snap

• Expose Consul UI on the host when EdgeX is operating in secure mode (snap)
  • T-shirt size: small – Stretch goal for Kamakura
  • https://github.com/edgexfoundry/edgex-go/issues/3744
  • Add a config option in consul; snap option
DevOps Scope

• Pipeline Optimizations:
  • Tech Debt: Fix multiple nodes being spun up during edgeXBuildGoApp and edgeXBuildCApp
    • T-shirt size: small
  • Spike: docker image multi-arch builds with buildx (spin up less nodes, speed up builds)
    • T-shirt size: small for the research; implementation TBD (see below)
    • Use of Docker buildx so we wouldn’t need to spin up ARM image to build docker arm images
    • Explored in the past; revisit approach (separate images)
    • Implementation: depending on spike docker image multi-arch builds with buildx
  • Spike: rewrite git-semver in python
    • Tshirt – medium size (impl TBD)
    • Implementation: depending on spike, rewrite git-semver in python
    • Punt on Semantic release work for now

• Assist in go lang linting/scanning
  • See security scope

• Documentation
  • T-shirt size: medium
  • Continued documentation updates (DevOps online docs)
  • Find it through README of DevOps repository
Docs and Examples Scope

- Examples updates/improvements
  - Cloud export – more explicit for Azure, AWS, Google
    - Updated to already work with Ireland
  - Update cloud templates
  - RP4
  - More Kubernetes support/examples

- Docs
  - Device service restructuring and adding undocumented features
  - Documenting the API (like discovery)