DevOps Working Group

Thursday April 23, 2020
## Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Owner</th>
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</thead>
<tbody>
<tr>
<td>10 Min</td>
<td>Geneva / DevOps Updates</td>
<td>James</td>
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<tr>
<td>10 Min</td>
<td>Geneva Release Planning</td>
<td>Lisa</td>
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<td>15 Min</td>
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<td>5 Min</td>
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</tbody>
</table>
Attendees

- James Gregg (Intel) (Me)
- Lisa Rashidi-Ranjbar
- Michael Johanson
- tony espy
- Bill Mahoney
- Emilio Reyes (Intel)
- Lenny Goodell (Intel)
- Walt M
DevOps WG Update

Geneva

• Jenkins Transformation to Pipelines
  • Work continues on the transformation to Jenkins Pipelines
    • Multiple stories related to release automation for Geneva – DONE
      • Identified a bug in the way we’re linting the groovy code for edgex global pipelines - DONE
      • Go Version to 1.13x in Verify Jobs seems to have come to DevOps tracker and tied to 2 projects
        • The correct version of go version 1.13 is evident per the Jenkins Pipeline logs
      • Card disappeared
      • Snap integration for release automation - WIP
        • Making excellent progress and completed review with approval from Canonical yesterday
        • No longer at risk for completion but will carry past code freeze in support of the Geneva release
        • Main user story - Integrate the snap release into the release kraken in cd-management #158, #163, #166 Merged
          • Remaining work – mapped to issues?
      • Documentation update for edgex-global-pipelines manual bump process
        • Ernesto recorded an asciinema recording on the process yesterday https://asciinema.org/a/Pk1PmkU3wTPMgxMNbGNmJ5dZm
        • Documentation updates will carry over past code freeze today without impacts to anything for the release - DONE
      • LFTools / Sigul latest version that supports Python 3.x - RISK
        • Need input from LF on alternative signing tool / No update wwi7
        • Will work to resolve now in Hanoi
    • Community Bridge findings for edgex-global-pipelines
    • New CB ticket opened –
      • Scan History failures - due to scaling / projects are queued for scanning – WIP
      • Bug with Settings view not loading

Hanoi

• Virtual F2F next week – No Edgex DevOps WG Meeting next week
• Started an explore related to enabling validation pipelines with Akraino build infrastructure – IT-19532
Geneva Freeze and Release dates

TSC approved

- Freeze: 12pm GMT, April 22 (Wed, week before planning meeting)
- Release: 12pm GMT, May 13 (Wed two weeks after planning meeting)

See Geneva release notes for details (on Slack)

REMINDER:
We will NOT be branching off master for the Geneva release.
Includes EVERYTHING
Release Artifact Status

• Docker images are staging to Nexus we are good to go here.
• Snaps are WIP
  • We have several PRs open in prep for the release
• RISKs
  • API v2 moved to Hanoi scope – not a risk
  • Nothing other than regressions / bug fixes are needed
EdgeX Geneva Release Overview

EdgeX Geneva Release Overview

- JSON Logic and/or EMQX Kuiper Demas (App WG)
- Archive Support Rules Engine (App WG)
- Data Feed Back into Core Data (App WG)
- App Services Batch and Send (App WG)
- Archive Export Services (App WG)
- Update to Golang 1.13
- Separate Config and Registry APIs
- Redis Default DB

- V2 API Specification (Core WG)
- V2 API Test Plan (Core + Test/QA WG)
- API Minor Versioning (Certification WG)
- Alternative Message Bus Provider (Core + App WG)

- Blackbox TAF Framework (Test/QA WG)
- System Integration Tests (Test/QA WG)
- Data Filter Design DS and Core Data (Device WG)
- Dynamic Device Provisioning (Device WG)

- API Documentation Template - Swagger (Test/QA WG)
- Open Horizon ‘Walk’ Phase (System WG)
- Open Horizon Build Automation (DevOps WG)
- Jenkins Pipelines Transformation (DevOps WG)
- Hardware Secret Storage (Security WG)
- Per Service Vault Token (Security WG)
- Vault Token Rotation (Security WG)
Geneva release

<table>
<thead>
<tr>
<th>Completed</th>
<th>Work In Progress</th>
<th>Release Backlog</th>
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<tbody>
<tr>
<td>195</td>
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Meeting Minutes

• Need to update bot - https://github.com/apps/semantic-pull-requests

• Research needed for Hanoi on use of Buildkit / buildkit runners for simplifying the build of the Docker images for ARM
  • Alternative to use something other than Docker – Kanico
  • Addresses the issue that Lenny called out that the ARM images for both x86 / ARM have different names today so the Docker compose files are hard to build. It would be nice if there was a single manifest in the Docker registry where both architectures share the same name.
# Geneva Release Schedule

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
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<tbody>
<tr>
<td><strong>Start Date:</strong> 4/22/20</td>
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**Assigned to:**
- Developers
- WG Chairs
- DevOps WG
- Release Team

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>wed apr 22</td>
<td>Code Freeze</td>
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<tr>
<td>thu apr 23</td>
<td>Update Documentation, Compose Files and Bug Fixes</td>
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<tr>
<td>fri apr 24</td>
<td>GitHub issues: Close / Mark for Hanoi</td>
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<tr>
<td>sat apr 25</td>
<td>Finalize Release Notes</td>
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<tr>
<td>sun apr 26</td>
<td>Remove Fuji Jobs</td>
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<tr>
<td>mon apr 27</td>
<td>Create Release YAML</td>
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<td>tue apr 28</td>
<td>Hanoi Planning</td>
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<td>wed may 6</td>
<td>Merge Release YAML</td>
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<td>EdgeX Geneva Release</td>
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<td>sat may 9</td>
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<td>mon may 18</td>
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<td>tue may 19</td>
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Geneva Dependency
Backlog Review
DevOps WG Update (Geneva)

Geneva (~Apr 2020) Focus:

• DevOps Jenkins Pipeline Transformation completed
  • Introduced new Jenkins Global Libraries for build automation
    • Includes test framework for Groovy code
    • Explore underway to look into code coverage of Groovy code using Codecov.io
  • Semantic Versioning using Intel contributed utility (git-semver) enhanced to include test framework
  • Continuous Delivery via "release-kraken"
  • Developer Enablement – GitHub Project Tracker, GitHub Issue label creation automated, gitcommit linter implemented *
  • New ci-build images and global libraries developed to support Jenkins Pipelines
  • New life cycle policies implemented on Linux Foundation Nexus repositories
  • Developer Documentation created for new Jenkins Pipelines
  • Improved performance of all builds to include collaboration with Linux Foundation to drive performance improvements for ARM builds (~15 mins build performance improvements using a new flavor of LF build nodes)
    • X86 build nodes (VM) uses 4cpu – 2gb
    • Arm64 build nodes (VM) now uses 4 cpu – 16gb

DevSecOps scope includes:

• Snyk Advanced Reporting via Community Bridge - $8K savings on licensing for developer licenses
• Snyk Docker Hub image scans with weekly reports of new vulnerabilities
• Snyk CLI of Go integrated into scan stage of Jenkins Pipelines
• Clair image scans within scan stage of Jenkins Pipelines
• DevOps contributed code fixes to address CVEs found in images based on Snyk reporting
• Lftools updated to use latest version – code signing, git tag signing, Docker image signing
Hanoi - DevOps

• Performance Optimizations
  • Jenkins Pipeline optimizations for edgex-go
  • Explore options from LF for supporting Jenkins on K8s
  • Use of Buildkit to simplify creation of x86/ARM build images so they share a common name
• Performance of the Build Environment
  • Monitoring / Alerting optimizations (Continuous Improvement Opportunity)
• Technical Debt
  • Caching Dependencies – speed it up (upstream dependencies)
• Open Horizons Enablement
  • Shared Infra with Open Horizons
  • Build Automation for OH
• Stretch Goals
  • Code Coverage for Jenkins Global Libraries (codecov.io)
  • Snap improvements
  • Support for –race flag
Geneva Planning

Scope Discussions
## Fuji Release

- **Freeze:** Oct 23\(^{rd}\) (Wednesday)
- **Release:** Nov 15\(^{th}\) (Friday)

### Release Timeline

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**Key Events:**
- **Code Freeze:** October 23
- **EdgX F2F in Phoenix:** November 15
- **GitHub Issues:** Close / Mark for Geneva
- **Create Fuji Jobs For Existing Repos:**
- **Open Tickets with LF for release on 11/15/19**
- **Finalize Release Notes**

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[edgexfoundry.org](http://edgexfoundry.org) | [@edgexfoundry](https://twitter.com/edgexfoundry)
Geneva – DevOps

**In**
- Full Pipeline transformation for EdgeX services
  - Convert Jenkins JJB Freestyle jobs to Jenkins Pipelines
- Introduce GitHub Org Plugin
- Simplified Jenkinsfile
- Global Libraries to support Jenkins Pipeline transformation
- Add Unit testing to global-libraries (uncommitted) **
- Snyk integration for edgex services
  - As part of Jenkins Pipeline conversion
- Slack integration with Jenkins pipelines
- Nexus Cleanup / Lifecycle Policy

**Out**
- Alternate deployment/orchestration
  - Beyond Docker/Snaps
  - Kubernetes
  - Kata Containers
  - …
- Integration Test Pipelines
- Code signing / Artifact signing **
Geneva Transformation: Architecture
How long does it take? Is this all Geneva scope?

Geneva Transformation

Phase 1
- Research Spikes
- Plugin Setup and Configuration
  - Jenkinsfile
  - Jenkinsfile.sandbox

Phase 2
- Jenkinsfile templates
- Implementation details get solidified
- Refactor existing pipelines to use new templates

Phase 3
- Existing Job Migration

Full Transformation by Geneva Release - April 2020

Phase 1
Work in Progress
Q3 2019
Fuji Planning

Scope Discussions
Fuji – DevOps

**In**
- Static code analysis tool identified and integrated into the EdgeX Jenkins Pipeline for Docker image scanning (Clair Server)
  - Explore SAST for true static code analysis to include additional tooling such as Fortify / Coverity
- Code and artifact signing with semantic versioning
- Fix Documentation – edgex-go
  - Create a new repo for edgex-docs
- Build Performance Optimizations
  - Pipelines for EdgeX Foundry base build images
  - Basebuild images managed locally within Nexus
  - Leverage PyPi Proxy for local pip dependencies
  - ARM builds – optimization leveraging different high CPU build nodes / OS (ARM Team)

**Out**
- Alternate deployment/orchestration
  - Beyond Docker/Snaps
  - Kubernetes
  - Kata Containers
  - ...
- SonarQube – SonarCloud is already in play in the LF
  - Decision: wait to see what codecov.io offers
- Suggestion to rename all of the Jenkins “arm” jobs so as to differentiate 32bit / 64bit architectures
- Full Pipeline transformation for EdgeX services
# EdgeX DevOps Commitments (Fuji)

## Scope of Work

<table>
<thead>
<tr>
<th>Activity</th>
<th>Status</th>
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<tbody>
<tr>
<td>Add static artifact analysis into the EdgeX Jenkins Pipeline (analysis of Docker /runtime artifacts, not the source code)</td>
<td>✅</td>
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<tr>
<td>Add code and artifact signing with semantic versioning</td>
<td>✅</td>
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<tr>
<td>Conduct build performance optimizations by:</td>
<td>✅</td>
</tr>
<tr>
<td>• Adding Pipelines for EdgeX Foundry base build images</td>
<td>✅</td>
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<tr>
<td>• Allow base build images to be managed locally within Nexus</td>
<td>✅</td>
</tr>
<tr>
<td>• Leverage PyPi Proxy for local pip dependencies</td>
<td>✅</td>
</tr>
<tr>
<td>Explore static code analysis like Checkmarx, Coverity, GuardRails, Synk, SonarQube</td>
<td>✅</td>
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</table>

- Clair Server landing no longer at risk for Fuji
  - LF committed to implement on AWS and fund with expected completion next week
- gitsemver along with lftools used for artifact signing and semantic versioning
- Jenkins build performance optimizations for base build images completed
- All base build images will now be stored in Nexus (Snapshot):10003
- PyPi enabled as part of Edinburgh scope
- Initial review of GuardRails showed that the product was identifying issues which were not applicable for microservices architecture
### Past / Future Agenda Topics

<table>
<thead>
<tr>
<th>Topic</th>
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<tbody>
<tr>
<td>Size change to use Ubuntu / Debian base build images to support –race flag for Go Lang</td>
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<tr>
<td>Clair scan findings – Discussion developer community if we want to break the build when there’s findings</td>
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<tr>
<td>- Bring into Security WG for discussion</td>
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<tr>
<td>Open Horizons enablement</td>
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<tr>
<td>Alignment to new LF roadmap self-service offerings – EdgeX use case for handling holding repositories</td>
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<tr>
<td>Release automation - key learnings and sharing with LF</td>
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<tr>
<td>Explore use of Buildkit</td>
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<tr>
<td>Explore use of Kanico</td>
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<tr>
<td>Snyk Dashboard Review</td>
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</tbody>
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Attendees & Community Participation – ww14

Community Participation

- Intel
- IoTech
- Dell
- VMWare
- ARM
- Canonical
- LF
- Kong
Attendees & Community Participation – ww15

Community Participation

- Intel
- IoTech
- Dell
- VMWare
- ARM
- Canonical
- LF
- Kong
Attendees & Community Participation – ww16

Attendees

Participants (5/6)

- James Gregg (Intel) (Me)
- Ernesto Ojeda (Intel)
- tony espy
- Emilio Reyes (Intel)
- Jim White
- Lisa Rashidi-Ranjbar

Community Participation

- Intel
- IoTech
- Dell
- VMware
- ARM
- Canonical
- LF
- Kong
Attendees & Community Participation – ww17