2020 CAP Implementation Workshop
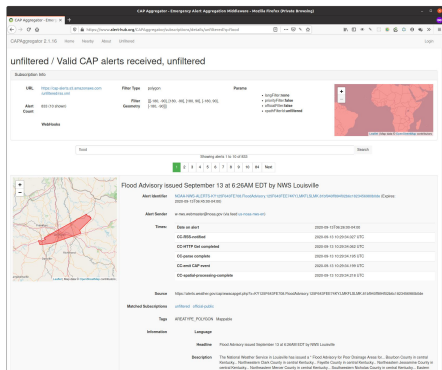
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Agenda

- All about the open source alert-hub software
  - purpose, process and function
- How is alert-hub developing in 2020
- Improvements since the 2019 workshop
  - Cloud support, Scaling and Resilience
  - Feed provider toolkit, dashboard
  - General
- Future Roadmap
  - Overall direction
  - MQQT
  - Immediate Priorities

Alert-Hub Software Introduction

Ethos and Principles (Why)

- There are system-wide (cross-cutting) challenges arising from the need to publish/provide Critical Alert information, and the need to deliver/obtain that information.
- The process of communicating alerts from information providers to information consumers over all devices in a trusted manner is a fundamental social good, and we can help with the system-wide challenges.
- Support and be part of the wide CAP ecosystem
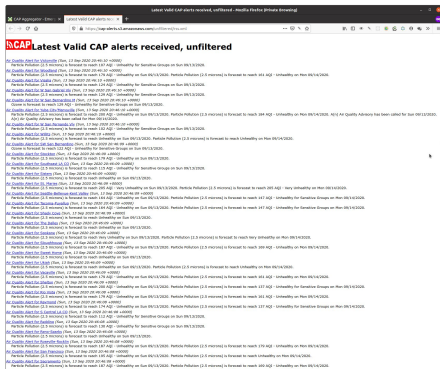- Open and Accountable, technical state of the art

What is alert-hub?

- A resilient, open source, internet scale toolkit for the CAP community existing to support
  - Publishers - Assisting in the secure authoring, validation, monitoring and onward publishing of alerts; reducing the load on publisher systems by aggregating consumption.
  - Consumers - By providing intermediary services such as spatial and non-spatial filtering, recombination into regional or subject based feeds, validation and verification.
  - The community - By providing an open-source reference implementation of an alerting service platform for future innovation, registries of feeds and sources. Working with information channels to present the CAP ecosystem as a coherent whole

Purpose of the Alert-Hub open source stack (what does it do?)

- Support the CAP community
  - Producers
    - Validation & Verification, Trust, Security, Alerting & monitoring
    - Provide a unified face of all alert feeds
  - Consumers
    - Aggregation, sorting, validation, Trust, Security
    - Consolidation into locale based aggregate feeds
    - Support for novel devices and protocols
  - Intermediaries & Specialist organisations
    - Aggregation and Filtering tools

Organisational Information (Who)

- Structure
  - Open Source
  - Not for Profit

- People
  - Eliot Christian - eliot.j.christian@gmail.com
    - US; Product Owner, Subject Matter Expert, leadership
  - Ian Ibbotson - ian.ibbotson@k-int.com
    - UK; Technical architecture, development and support lead
  - Future Teams

Provenance (When)

○ Toolkit arose due to some of the challenges we spoke about previously - functional and non-functional challenges

○ First commit 19 Nov 2016

○ Service established on AWS

○ Continuous development, regular updates and enhancements

○ Alert-hub continues to attract requests for support and extension projects and support through grants and in-kind contribution of the community

https://github.com/SemwebServices/PubSubHubBubFacade/

https://github.com/SemwebServices/CAPCollator/

Functional Makeup (How)

- Alert-hub is currently composed of several major components in a Service Oriented Architecture
  - System-facing / Edge
    - The Feed Collector (feed-facade)
    - The CAP Aggregator
    - Source and Target Feeds
  - Supporting / Internal
    - ElasticSearch (Text Search)
    - RabbitMQ (Messaging, Guaranteed Deliver)
    - PostgreSQL (System of Record)

What did we get really right?

- Internet scale cloud storage as an intermediary destination for filtered feeds
- Shared service for validation and verification and feed health - publisher feedback
- Elasticsearch for combined spatial and text matching, pre-filtering/pre-coordination
- ***Platform for demonstrating the viability of the CAP ecosystem to device manufacturers and content provider networks.***

FeedFaçade : A tool to he × +

https://www.alert-hub.org/feedFacade/

FeedFaçade 2.1.14 | Home | Alert Sources | Live Log | Login

Code	Base URL	Enabled?	Last Checked	Process Status	Last Fetch	Register Status	Health
af-andma-en	https://cap-sources.s3.amazonaws.com/af-andma-en/rss.xml	Yes	2020 09 13 10:45:09.138	paused	OK	operating	100%
ag-ms-en	https://alert.metoffice.gov.ag/capfeed.php	Yes	2020 09 13 10:45:08.236	paused	ERROR	operating	0%
ai-dma-en	https://axa-primary.capews.com/capews/public/atom?type=cap	Yes	2020 09 13 10:45:10.341	paused	OK	operating	100%
ar-smn-es	http://www3.smn.gov.ar/CAP/AR.php	Yes	2020 09 13 10:45:14.722	paused	OK	operating	98%
at-zamg-en	http://meteoalarm.eu/ATOM/AT.xml	Yes	2020 09 13 10:45:10.852	paused	OK	operating	100%
aw-dma-en	http://201.229.69.218/cap/en/alerts/rss.xml	Yes	2020 09 13 10:44:00.270	paused	ERROR	operating	0%
aw-dma-nl	http://201.229.69.218/cap/nl/alerts/rss.xml	Yes	2020 09 13 10:44:00.481	paused	ERROR	operating	0%
aw-dma-pap	http://201.229.69.218/cap/pap/alerts/rss.xml	Yes	2020 09 13 10:44:00.466	paused	ERROR	operating	0%
ba-fhmzbih-bs	http://meteoalarm.eu/ATOM/BA.xml	Yes	2020 09 13 10:45:11.077	paused	OK	operating	100%
bb-dem-xx	https://brb-secondary.capews.com/capews/public/atom?type=cap	Yes	2020 09 13 10:45:13.595	paused	OK	operating	100%
be-irm-en	http://meteoalarm.eu/ATOM/BE.xml	Yes	2020 09 13 10:45:13.555	paused	OK	operating	100%
bg-meteo-bg	http://meteoalarm.eu/ATOM/BG.xml	Yes	2020 09 13 10:45:15.909	paused	OK	operating	100%
br-inmet-pt	http://alert-as.inmet.gov.br/cap_12/rss/alert-as.rss	Yes	2020 09 01 15:14:38.525	in-process	OK	operating	100%
bw-met-en	https://cap-sources.s3.amazonaws.com/bw-met-en/rss.xml	Yes	2020 09 13 10:45:08.686	paused	OK	operating	100%
ca-aema-xx	http://emergencyalert.alberta.ca/aeapublic/feed.atom	Yes	2020 09 13 10:45:08.552	paused	OK	operating	100%
ca-msc-xx	http://rss.naad-adna.pelmorex.com/	Yes	2020 09 13 10:45:10.428	paused	OK	operating	100%
ca-msp-xx	http://rss.naad-adna.pelmorex.com/	Yes	2020 09 13 10:45:10.365	paused	OK	operating	100%
ch-meteoswiss-de	http://meteoalarm.eu/ATOM/CH.xml	Yes	2020 09 13 10:45:16.101	paused	OK	operating	100%
cn-cma-xx	http://alert-feed.worldweather.org/cn-cma-xx/rss.xml	Yes	2020 09 13 10:45:14.512	paused	OK	operating	100%
co-ungrd-es	http://www.gestiondelriesgo.gov.co/rss/AtomAlert.aspx	Yes	2020 09 13 10:45:12.585	paused	OK	operating	100%

FeedFaçade 2.1.14   Home   Alert Sources   Live Log   Login

[89] aw-dma-en /

Feed Info

URL	http://201.229.69.218/cap/en/alerts/rss.xml
Semantic Status	**operating** (operating|testing|OTHER) - only operating and testing feeds will be harvested
Harvester Control Status	**paused** (in-process|paused)
Last fetch status	**ERROR**(Last completed=2020-09-13 10:45:29 GMT, highest timestamp=1970-01-01 00:00:00 GMT)
Health Last Hour	0%
Last Error (If any)	**java.lang.RuntimeException: org.apache.http.conn.ConnectTimeoutException: Connect to 201.229.69.218:80 [/201.229.69.218] failed: connect timed out**

Feed Activity - last 24 hours

Hour (UTC)	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10
Error Count	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	30
Success Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Entries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Health																										

Recent Issues

| Key	Message	First Seen	Last Seen	Repeated
processFeed[89] http://201.229.69.218/cap/en/alerts/rss.xml general problem fetching feed	org.apache.http.conn.ConnectTimeoutException: Connect to 201.229.69.218:80 [/201.229.69.218] failed: connect timed out	2020-08-11 08:58:31GMT	2020-09-13 10:45:29GMT	31696

Recent Entries

Timestamp	Entry

CAP Aggregator - Emerg ✕ +

← → C ⌂ | 🛇 🔒 https://www.alert-hub.org/CAPAggregator/subscriptions/details/unfiltered?q=flood | ▤ ⋯ ♡ 🛡 📩 ★ ☆ | ⫴\ 🔲 👁 ★ 🔲 🔲 🌐 🅱 ◆ 🟢 ⬢ » ≡

CAPAggregator 2.1.16   Home   Nearby   About   Unfiltered   Login

unfiltered / Valid CAP alerts received, unfiltered

Subscription Info

URL	https://cap-alerts.s3.amazonaws.com /unfiltered/rss.xml	**Filter Type**	polygon	**Params**		
Alert Count	833 (10 shown)	**Filter Geometry**	[[[-180, -90], [180, -90], [180, 90], [-180, 90], [-180, -90]]]		• langFilter:**none** • priorityFilter:**false** • officialFilter:**false** • xpathFilterId:**unfiltered**	
	WebHooks					

Leaflet | Map data © OpenStreetMap contributors

flood   Search

Showing alerts 1 to 10 of 833

1 2 3 4 5 6 7 8 9 10 84 Next
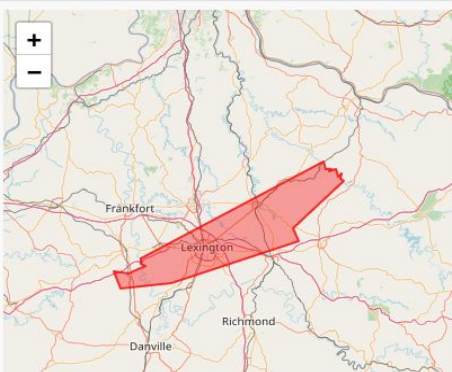
Flood Advisory issued September 13 at 6:26AM EDT by NWS Louisville

Alert Identifier	NOAA-NWS-ALERTS-KY125F643FE708.FloodAdvisory.125F643FEE74KY.LMKFLSLMK.81bf940ff894f02b6c1823456980b0de (Expires: 2020-09-13T06:45:00-04:00)
Alert Sender	w-nws.webmaster@noaa.gov (via feed us-noaa-nws-en)

Times:		
Date on alert		2020-09-13T06:26:00-04:00
CC-RSS-notified		2020-09-13 10:29:34.027 UTC
CC-HTTP Get completed		2020-09-13 10:29:34.062 UTC
CC-parse complete		2020-09-13 10:29:34.195 UTC

Alert-Hub
High Level Direction

High Level Direction

- Toolkit with Reference Implementations
  - Toolkit Supporting anyone wanting to run their own virtual-private alert-hub for whatever reasons arise
  - Cloud based service - highly resilient alert aggregation and re-publishing in secure long-term data channels.

Alert-Hub Software Yearly Update

Work streams

Devops and Deployment

- **Support for Azure - From AWS AMI images to docker-swarm, dockerhub and on to kubernetes**
- Scaling
- Deployment tested on *AWS*, *Azure*, *Docker-Swarm*, VPC and *bare-metal kubernetes*
- CI / CD with pipelines through to docker image repository
- Zero-downtime upgrades

Work streams

Horizontal Scaleout, Performance, Efficiency

- Improvements to feed fetcher - horizontal scaling, thread-pool and promise based.
- Reflecting ability to dynamically scale with workload (Including Kubernetes actuator endpoints)
- Improvements in HTTP protocol handling, with progressive enhancement (HTTP HEAD)

Work streams

Ongoing Maintenance

- Problems of modern systems development -- rolling dependency upgrades
- Continually maintain performance, security and integrity
- Upgrade to SpringBoot2, JDK11, ES7, etc
- Improvements to support zero-downtime upgrade
- Site Certificates / letsencrypt
- Started Feed provider Feedback

Alert-Hub Software Future Roadmap

Future Roadmap

Secure Goals

- XML Signature Verification, and optionally re-signing
- Authentication and Authorization improvements (Keycloak)
- Conformance Testing (Profile Tags)
- "Sandbox" environments - regression testing feeder systems

Future Roadmap - Aspirations

Functional Aspirations

- Digital Signature Validation
- Provider Live Messaging / alerting
  - Provider Registration
  - SMS, Slack, Gtalk/MQQT, Email
- Public MQQT - Live push alerts over web-sockets
- Public WebHooks (Sub match, Feed issues)
- Demonstrator kiosk / template application or widget
- Develop the alerting service platform with other capabilities

Future Roadmap - Aspirations

Architectural Aims and Aspirations

- Back-office
  - SOA to Microservices
  - Authentication and Authorization - Keycloak to enable
    - Consolidation & Open up to external authentication services
    - Authorized access to webhooks and other feedback services
    - Secure MQQT
- Front-End
  - Microsites
  - SPA

Summary

Summary

- Development & Adoptions continues, continuous improvement
- AlertHub helps address real issues for publishers and consumers - Seeking partners to
  - Run AlertHub nodes
  - Collaborate on testing MQQT, Webhook and other notification mechanisms
  - Support new use cases and requirements - open or closed
  - Improve sustainability
  - Give feedback, suggestions "If only it……"

Comments / Questions

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Thankyou

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