Extension of ASGS Operational Awareness Dashboard (OAD) for APS Health Monitoring (APS-HM)

DHS CRC Year 6 Project

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Project Overview (Years 4-6)

Develop a web-based dashboard for ASGS operators that

- shows real-time status of ASGS systems
- instrument ASGS with AMQP messages, send to database
- web-page display of messages for ASGS operators
Year 6 Objectives

- APS-Health Monitor
- new messages for “run properties”
- extend database
- new tabs in dashboard

Transition Activities

Host a virtual meeting with ASGS operators and communicators to train them on new features and functionality of the new ASGS-HM website.

Successful use of the ASGS-HM during the 2020 Atlantic Hurricane season

Maintenance and updating of the ASGS-HM system.
Year 6 Objectives

New tabs in dashboard

- tabular instance view
- “run properties” metadata
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- New tabs in dashboard
- Tabular instance view
- "run properties" metadata
Leverage Containerization/Docker for Cloud-based Messaging and Visualization

**Goal:** Deploy messaging/visualization system “in the cloud”.

**Benefit:** Stable/extensible resource management

**Approach:** Modern, “containerized” system and workflow management (Kubernetes)
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Menu items/options extracted from run.properties database

User-selected colormaps
Leverage Containerization/Docker for Cloud-based Messaging and Visualization

Available Layers extracted directly from THREDDS Data Server based on run.properties database

No pre-configuration of ADCIRC grid details needed.

Any ASGS results posted to the run.properties DB can be visible
Leverage Containerization/Docker for Cloud-based Messaging and Visualization
Tiling Generator

- **adcirc2geotiff**
  - max water level
  - max wind speed
  - max swan hsign

- geotiff2mbtiles
  - zoom 0-10
  - zoom 11
  - zoom 12
  - zoom 13

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- Persistent Storage

- MapBox Tiles
Deployment to Amazon Web Services EKS

AWS has a Kubernetes service called Elastic Kubernetes Service (EKS).

Preliminary test: we have pushed the system to EKS

- Initial creation of AWS EKS installation scripts: ~2-4 hours.
- Elapsed execution time of scripts: ~5 minutes.
- Extra EKS clusters easily provisioned “on demand”.
  - scales with compute needs

~½ day deployment time
APS Health Monitor

Year 6 Objectives

- new messages for “run properties”
- extend database
- new tabs in dashboard

Transition Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host a virtual meeting with ASGS operators and communicators to train them on new features and functionality of the new ASGS-HM website.</td>
<td>Several ASGS operators’ calls</td>
</tr>
<tr>
<td>Successful use of the ASGS-HM during the 2020 Atlantic Hurricane season</td>
<td>31 Oct 2020</td>
</tr>
<tr>
<td>Maintenance and updating of the ASGS-HM system.</td>
<td>30 Jun 2021</td>
</tr>
</tbody>
</table>