CAP Editor Operations Guide

Introduction:

This document concerns administrative operations for running the "CAP Editor" freeware. CAP Editor is a tool for creating and publishing emergency alerts in the Common Alerting Protocol (CAP) format. CAP Editor runs on the Amazon Web Services cloud. Operation of CAP Editor from a user perspective is described in a separate document. [1]

This draft technical document is maintained by Eliot Christian, with grateful acknowledgement to those listed in the Contributors section.

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[1] CAP Editor runs at https://cap.alert-hub.org Anyone can enter the system as a guest and view sample CAP alerts. A document describing each of the screens presented by CAP Editor is available at https://www.preparecenter.org/resources/cap-editor-preview-notes

1. CAP Editor Overview

The cloud-based CAP Editor is freeware for creating and publishing emergency alerts. These alerts follow the international standard Common Alerting Protocol (CAP) [2] and the eXtensible Markup Language (XML) schema specified in each version of the CAP standard. [3]

CAP Editor runs on the Amazon Web Services (AWS) cloud. Accordingly, AWS facilities are fundamental to various administrative procedures detailed herein. CAP Editor code leverages the AWS PHP Software Development Kit. Four AWS Services are essential to operating CAP Editor: AWS Identity and Access Management, AWS Cognito, AWS Elastic Beanstalk, and AWS Simple Storage Service.

The cloud-based CAP Editor freeware is coded primarily in PHP. It is similar to two other versions of the CAP Editor freeware, especially the non-cloud version in PHP, but also the other version coded in Java.

2. Alerting Authorities

Emergency alerts are inherently serious and some alerts can be life-critical. Accordingly, CAP Editor is designed to restrict use to "alerting authorities", i.e., organizations that are considered authoritative in the context of emergency alerting.

Authority is fundamentally a matter of trust and many different kinds of organizations might be considered authoritative in different contexts. Examples include: government agencies, non-government organizations, scientific agencies, commercial organizations, and faith-based organizations, among many others. Organizations might be considered authoritative at many different scales as well: neighborhood, campus, city, state/province, country, international, and global. Also, particular organizations might be considered authoritative in just a narrow set of hazard threats: weather, flood, fire, earthquake, tsunami, cyber security, and so on.

Although CAP Editor could be applied to any alerting authority, this Operations Guide focuses on an instance of CAP Editor configured for global-scale, multi-hazard emergency alerting to the public, wherein alerting authorities are designated official by national governments. [4] There is an internationally recognized mechanism for publicizing those national designations: the Register of Alerting Authorities. [5] In that Register, a nation can include in any of its alerting authority records the URL of a CAP alert news feed. [6] When a national alerting authority includes CAP Feed URLs in its alerting authority records, those public emergency alerts can be automatically disseminated by online services with very broad reach, such as Google, Red Cross/Red Crescent apps, AccuWeather, and The Weather Company, among others.

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[2] The Common Alerting Protocol standard is briefly described in an online alerting context at https://www.preparecenter.org/resources/cap-flyer

[3] The XML schema for CAP alerts is found in the specifications, versions 1.1 and 1.2, available at http://docs.oasis-open.org/emergency/cap/

[4] This instance of CAP Editor is running at https://cap.alert-hub.org

[5] The international Register of Alerting Authorities is at http://www.wmo.int/alertingorg

[6] For example, the U.S. National Weather Service record in the Register of Alerting Authorities includes this CAP Feed URL: https://alerts.weather.gov/cap/us.php?x=0

3. CAP Alert Sources

From the CAP Editor system perspective, a "CAP alert source" is a uniquely-identified set of CAP alerts from a single alerting authority with the alert content in a single language. A "source identifier" (sourceId) is assigned to each such source, coded according to: the associated nation, national organization within that nation, and the natural language of the CAP alerts. [7] For example: "us-noaa-nws-en" could be assigned as the sourceId for CAP alerts in English published by the National Weather Service (NWS) with the National Oceanographic and Atmospheric Administration (NOAA) of the United States (US).

Each CAP alert source is managed as a separate entity in the CAP Editor tool. Associated with each CAP alert source is a pair of alert containers on AWS Simple Storage Service (S3). The S3 bucket named "cap-sources" contains all CAP alerts actually published via CAP Editor. It is open for reading by the public. The S3 bucket named "cap-drafts" contains CAP alerts drafted via CAP Editor. It is not open for reading by anyone except those authenticated as members of the "composer" or "approver" groups. Within each of these two buckets, each set of alerts is distinguished by a prefix whose value is a sourceId. For example, draft alerts in English that are published by US NOAA NWS would be in the S3 directory: "cap-drafts/us-noaa-nws-en/".

3.1. Managing CAP Alert Sources

The CAP Editor administrator may receive requests to add, change, or delete CAP alert Sources maintained in the CAP Editor system. The official request must come from the alerting authority for that source.

If the request to add a source requires a language not yet available in CAP Editor, then the process described in the section named "User Interface Languages" must be executed before proceeding further.

On receipt of an official request to add a source, the CAP Editor administrator makes a new source entry in the CAP Editor Web page that lists available sources. [8] The CAP Editor administrator also assures that a logo is available for the new source, assigns a sourceId, and creates a new configuration file within the CAP Editor software package, with the path file name: sources/<sourceId>/parms.xml The CAP Editor administrator must then upload and re-deploy the updated CAP Editor software package. He/she also needs to run a utility that initializes the "cap-drafts" and "cap-sources" S3 buckets for that sourceId prefix. This includes: several example files in both the cap-drafts and cap-sources S3 buckets for that sourceId prefix, plus the initial RSS file and both stylesheets in the cap-sources S3 bucket for that sourceId prefix. After the system is initialized, the alerting authority should run it on a test basis before beginning to issue actual CAP alerts.

On receipt of an official request to delete a source, the CAP Editor administrator deletes the source entry from the CAP Editor Web page that lists available sources. That source's CAP Feed would be removed from the "cap-sources" S3 bucket for that sourceId prefix.

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[7] The sourceId is a lower-case alphabetic ("a-z") plus dash ("-") character string, comprised of three parts. The first part is an ISO 3166 country code (two alpha characters) and it is delimited by a following dash. The third part is an ISO 639 language code (two or three alpha characters) and it is delimited by a preceding dash. The second part consists of an alphabetic string, which may have an embedded dash.

[8] Sources initialized for use of the CAP Editor are listed in the Web page at http://cap.alert-hub.org/index.html

On receipt of an official request to change a source, the process varies depending on whether the change requires that the sourceId be changed. If the sourceId must be changed, the change request must be handled as the combination of an add request and a delete request. Otherwise, the CAP Editor administrator makes the change directly in the system. This includes changing the source entry from the CAP Editor Web page that lists available sources.

4. Roles and Users

CAP Editor implements a "Role Based Access Control" mechanism to assure that only authorized users can use CAP Editor to create and publish CAP alerts. The role of "guest" is implicitly defined as a user of CAP Editor who is not able to store any data and is only allowed to view CAP alerts that are already published publicly (i.e., a guest cannot view draft alerts). In addition, two authenticated roles are explicitly defined:

- users in the "composer" role are authorized to view and create draft CAP alerts, but not to approve nor to publish final CAP alerts;
- users in the "approver" role are authorized to view and create draft CAP alerts, and not approve and publish CAP final alerts.

A person who attempts to use CAP Editor in the role of composer or approver is challenged by an authentication system to supply CAP Editor credentials. The only credential implemented at present is a registered user name / password combination. When the prospective CAP Editor user responds with a correct username and password combination, the user is granted access according to the associated role. (The role of approver takes precedence if the user is authorized in both roles.)

Further operation of the CAP Editor from a user perspective is described in a separate document. [9]

4.1. Managing Users

For any particular sourceID, an official request to change the authorized CAP Editor users must come from the alerting authority for that source. Those persons must be identified by name and e-mail address, and must be distinguished as to which persons are authorized to approve CAP alerts and which persons are only authorized to compose CAP alerts.

The CAP Editor administrator receives the official request and modifies the registered users for that sourceId accordingly. This action is performed using the console interface to AWS Cognito, under the option to manage a User Pool named "cap_editors_user_pool". Each user has three user attributes: given_name, family_name, and email. Users login to CAP Editor using the email attribute as the user name. For a batch of new users, AWS Cognito provides an "import job" option whereby user attributes are provided in a "comma separated values" (CSV) format.

Once the user is added to the user pool, he/she must be assigned by the CAP Editor administrator to either the composers or approvers group defined for the alerting authority. Assignment to the group conveys the access permissions, which are pre-configured through AWS Identity and Access Management (IAM) permissions policies. It should be noted that the group permission spans all sourceId assignments for the authority. For example, an authorized user for the authority "us-noaa-nws" has access to the sourceId "us-noaa-nws-es" (Spanish) as well as "us-noaa-nws-en" (English).

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[9] CAP Editor runs at https://cap.alert-hub.org Anyone can enter the system as a guest and view sample CAP alerts. A document describing each of the screens presented by CAP Editor is available at https://www.preparecenter.org/resources/cap-editor-preview-notes

In the case of a new user or a change in the password for an existing user, that user will be prompted to set a private password during login. This is a "multi-factor authentication", which in this case means the user must access his/her email to obtain a link which then allows setting a password. Only once the private password is set will he/she be allowed to use CAP Editor for composing or approving CAP alerts.

In the initial stage before the alerting authority indicates that a registered sourceId is operational, CAP Editor is configured to only create "Test" CAP alerts. That constraint is removed once the alerting authority indicates that a sourceId is operational.

5. User Interface Languages

The user interface presented by the CAP Editor tool defaults to English but it can be customized somewhat. The language customization uses the "i18n" freeware, which provides the ability to translate flagged element values and element attribute values within an HTML page.

In CAP Editor, 114 items in the system's PHP/HTML pages have been flagged with such an identifier. There are about 1000 English words across all of these items. When CAP Editor is being used, translation occurs if the CAP Editor library contains a JSON translation file (file name: translation.json) for the language code indicated in the sourceId.

It should be noted that CAP Editor contains many error messages in English only. These messages should occur rarely during typical use of CAP Editor.

5.1. Managing User Interface Languages

The CAP Editor administrator may receive requests to add another natural language for the user interface presented by the CAP Editor tool. To add another language, it is necessary to translate about 1000 words as given in the "English" column within the example "English & French" translation document. [10] A translator would provide translations to the new language, replacing the entries as illustrated within the "French" column. Note that the words highlighted in yellow must remain in English.

Once the new language translation column is complete, the revised document is sent to the CAP Editor administrator who then makes the translation file (in JSON format) needed by the CAP Editor program.

6. Text Templates

CAP Editor presents a link to CAP alert message templates that offer text suggestions for the "headline", "description" and "instruction" elements of a CAP alert. These CAP alert message templates were developed in five Caribbean languages and address about 20 some common alerting situations. [11]

6.1. Managing Text Templates

The CAP Editor administrator may receive official requests to add new text templates or change existing text templates used in the CAP Editor tool. The official request must come from the alerting authority for that source. These new templates should be constructed following the pattern of the original text

[10] The translation template "CAP Editor Text - English & French.docx" is available at https://www.preparecenter.org/resources/cap-editor-user-interface-language-template

[11] CAP alert message templates in English, Dutch, French, Papiamento, and Spanish, are available at https://www.preparecenter.org/resources/cap-editor-message-templates

templates. The new or replacement file needs to be placed within the CAP Editor software package, with the path file name: "sources/<sourceId>/textTemplate.html" The CAP Editor administrator must then upload and re-deploy the updated CAP Editor software package.

7. RSS News Feeds

CAP Editor publishes CAP alerts as an Internet-standard news feed, compliant with the RSS (Really Simple Syndication) version 2 specification, which is an XML format. Each CAP Editor source has its own RSS news feed, and that feed can be customized. [Instructions to view an example CAP Editor RSS file are in Appendix A.1.] The RSS news feed also has an associated XSL stylesheet, and that can be customized as well. [Instructions to view an example CAP Editor RSS file are in Appendix A.2.]

7.1. Managing RSS News Feeds

The CAP Editor administrator may receive official requests to change the RSS news feed or associated XSL stylesheet for a specific sourceId that is being used in the CAP Editor tool. The official request must come from the alerting authority for that source.

The alerting authority may request to customize the content of the RSS file (file name: rss.xml) for a CAP Editor sourceId assigned to it. That is: a particular alerting authority can customize the content of one of its RSS news feeds in a particular language. Four elements within the RSS file for a sourceId can be customized: title, image/url, description, and copyright. Note that the value for the image/url element is a picture and it should of a size and shape compatible with presentation in a rectangle measuring 200 pixels horizontally and 80 pixels vertically.

The alerting authority may wish to customize how the RSS file is presented. This is accomplished by modifying the associated stylesheet (file name: rss-style.xsl).

Once a modified RSS file or RSS stylesheet is ready, the CAP Editor administrator uses the AWS S3 console interface to upload and replace the file in the S3 bucket cap-sources with the associated sourceId prefix. The permissions for the updated file must be reset to public read access.

8. CAP Alert Stylesheets

Given that CAP alerts are in the XML format, it is usual to have the content presented in Web browsers as HTML through an XML stylesheet file. [Instructions to view an example CAP alert stylesheet file are in Appendix A.2.] Including a stylesheet makes the information easier for a human to read, without compromising the ability for the CAP alert to be processed as data.

8.1. Managing CAP Alert Stylesheets

The CAP Editor administrator may receive official requests to change the CAP alert XSL stylesheet (file name: alert-style.xsl) for a specific sourceId that is being used in the CAP Editor tool. The official request must come from the alerting authority for that source.

The alerting authority is encouraged to customize the CAP alert presentation in HTML by inserting HTML for a page header and page footer. This header and footer would typically align with the header and footer content of other pages on the Web site of the alerting authority. The CSS style parameters in the stylesheet should also align with the CSS style of other pages on the Web site of the alerting authority.

Once a modified stylesheet is ready, the CAP Editor administrator uses the AWS S3 console interface to upload and replace the file in the S3 bucket cap-sources with the associated sourceId prefix. The permissions for the updated file must be reset to public read access.

9. Intellectual Property Note

As author, Eliot Christian offers the program code, documents, and design works comprising CAP Editor to be freely copied and redistributed in any medium or format, and encourages others to transform and build upon the material for any purpose. The Creative Commons license called "Attribution 4.0 International (CC BY 4.0)" is assigned. [12]

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Glossary of Terms

alerting authorities - organizations designated as authoritative in the context of alerting

AWS (Amazon Web Services) - a collection of cloud computing services offered by Amazon.com

CAP (Common Alerting Protocol) - an XML-based data format for exchanging public warnings and emergencies between alerting technologies

Register of Alerting Authorities - an online facility maintained by the maintained by the World Meteorological Organization (WMO) and the International Telecommunication Union (ITU)

S3 (Simple Storage Service) - an AWS facility for storing data and information on Amazon cloud

S3 Buckets - AWS Simple Storage Service manages "objects" in a database but S3 facilities present an interface that gives the appearance that those objects are files within a computer file system. The top level of the file system is addressed as a set of "buckets" that have globally unique names. CAP Editor primarily uses two buckets: one named cap-drafts and one named cap-sources.

sourceId - a source identifier assigned to a CAP Editor source, consisting of three parts: country code - national organization abbreviation - natural language code (e.g., "us-noaa-nws-en")

XML (eXtensible Markup Language) - a set of rules for encoding documents in a format that is both human-readable and machine-readable

[12] Creative Commons licenses are described at https://creativecommons.org/. The license "Attribution 4.0 International (CC BY 4.0)" is at https://creativecommons.org/licenses/by/4.0/

Appendix A. Accessing XML Content of CAP Editor Web Pages

A.1 Access XML Content of an RSS File

To access an example RSS file, use a Web browser and go to https://cap.alert-hub.org Choosing any one of the sources in the table, click on the URL in the "authority Feed" column of that row.

When the chosen RSS feed is displayed, use the CTRL-u key combination to reveal the source XML of the RSS feed.

You can edit the XML content with an XML editor program or any text editor program. To copy the XML, use the CTRL-a key combination followed by the CTRL-c key combination. Then, in the XML editor or text editor program, use the CTRL-v key combination to paste the XML.

A.2 Access XML Content of an RSS Stylesheet

To access an example RSS stylesheet, use a Web browser and go to https://cap.alert-hub.org Choosing any one of the sources in the table, click on the URL in the "authority Feed" column of that row.

When the chosen RSS feed is displayed, use the CTRL-u key combination to reveal the source XML of the RSS feed. The second line of the RSS XML is a reference to the xml-stylesheet (file extension: xsl). Within that line, copy the value of the "href" attribute but without the quotes. Paste that value into the URL prompt of your Web browser and then hit enter.

The source XML of the chosen RSS stylesheet will be displayed. You can edit the XML content with an XML editor program or any text editor program. To copy the XML, use the CTRL-a key combination followed by the CTRL-c key combination. Then, in the XML editor or text editor program, use the CTRL-v key combination to paste the XML.

A.3 Access XML Content of a CAP Alert Stylesheet

To access an example CAP alert stylesheet, use a Web browser and go to https://cap.alert-hub.org Choosing any one of the sources in the table, click on the URL in the "authority Feed" column of that row.

When the chosen RSS feed is displayed, choose any one of the CAP alerts. When the chosen CAP alert is displayed, use the CTRL-u key combination to reveal the source XML of the CAP alert.

You can edit the XML content with an XML editor program or any text editor program. To copy the XML, use the CTRL-a key combination followed by the CTRL-c key combination. Then, in the XML editor or text editor program, use the CTRL-v key combination to paste the XML.