

# Common Alerting Protocol (v 0.7) – Alert Message Data Dictionary

Revised 3/7/2003

## About the Common Alerting Protocol (CAP)

The Common Alerting Protocol is a draft specification of open, non-proprietary, standards-based data formats for the exchange of emergency alerts and related information among emergency agencies and public systems. The CAP will be designed to facilitate the collection and relay of all types of hazard warnings and reports.

Development and deployment of a standard such as CAP will yield important benefits for public safety:

- Warnings to the public will be better coordinated across the wide range of available warning and notification systems
- Workload on warning issuers will be reduced, since a single warning message will be compatible with all kinds of warning delivery systems.
- Overall “situational awareness” will be enhanced, since CAP will permit the aggregation of all kinds of warning messages from all sources for comparison and pattern recognition.

The Common Alerting Protocol has been under development since 2001 through the efforts of an international ad-hoc Working Group of technical and public safety experts.

## About the eXtensible Markup Language (XML)

The eXtensible Markup Language (XML) is the most widely accepted format for exchanging structured data between different computer systems in the world today. It is an open, non-proprietary standard shared by all major software providers.

Recommendations for XML are developed and refined by a consortium of users and maintained by the World Wide Web Consortium (W3C). (<http://www.w3c.org/XML/>)

## Changes in CAP Version 0.7

This is a minor update from version 0.6, incorporating experience from several prototype implementations and field trials, and insights obtained in discussions among the Working Group:

Changes in this update:

1. Added a new mandatory element named "msg\_scope" to the main message block.
2. Added a new optional "password" element to the main message block.
3. Added a new optional "auth\_code" element to the main message block.
4. Deleted the "signer\_id", "signature" and "digest" elements from the CAP message format.
5. Allowed only a single instance of a "geo\_code" element within a single area block. (Multiple area blocks are still permitted.)
6. Revised the sequential-priority recommendation for multiple info blocks in the same language.
7. In the enumerated values for "event\_cat" added "Safety" for general emergency management and public-safety messages.
8. Renamed the "probability" element to "certainty".
9. Within the "urgency" "severity" and "certainty" (or "probability") elements, renamed the value "Uncertain" to "Unknown."
10. Within an "area" block, allowed only one of "polygon", "radius" or "geo\_code" elements in addition to the mandatory "area\_desc" description.

*Note: Enumerated element values remain subject to future revision as recommendations for common vocabulary become available.*

**Part 1 - Top-Level Elements** (mandatory elements are listed in **boldface**)

<b>Tag Name</b>	<b>Purpose</b>	<b>Content</b>
<b>cap:alert</b>	<b>Container for entire alert msg.</b>	Surrounds CAP alert message body. Must reference explicit CAP namespace. E.g.: <cap:alert xmlns:cap="http://www.incident.com/cap"> [message_body] </cap:alert>
<b>cap:msg_id</b>	<b>Message ID</b>	A number or string uniquely identifying this message, assigned by the sender. No spaces or restricted characters (< and &)
<b>cap:sender_id</b>	<b>Sender ID</b>	Identifies the originator of this alert. Guaranteed by assigner to be unique globally; e.g., may be based on an Internet domain name. No spaces or restricted characters (<, >, &, ', ")
cap:password	Password	A string password for authenticating the sender. (Note that this element should only be used on secure channels, and that simple password authentication schemes have numerous well-known weaknesses.)
cap:source_id	Operator or device ID	Text
<b>cap:sent</b>	<b>Date/Time when message was originated</b>	Date and time of message origination in ISO 8601 format (e.g., "2002-05-24T16:49:00-07:00" for 24 May 2002 at 16:49 PDT)
<b>cap:msg_status</b>	<b>Appropriate handling of message</b>	"Actual" – actionable by all targeted recipients "Exercise" – actionable only by designated exercise participants; exercise identifier should appear in <cap:msg_note> "Test" – Technical testing only, all recipients disregard
<b>cap:msg_scope</b>	<b>Intended distribution of message</b>	"Public" – for general dissemination to unrestricted audiences "Restricted" – for dissemination only to users with a known operational requirement "Private" – for dissemination only within the sender's own organization or system
cap:auth_code	Distribution control code	A text value used to specify a list of authorized recipients (primarily for use with the "Restricted" value in <cap:msg_scope>)
<b>cap:msg_type</b>	<b>Nature of message</b>	"Alert" – initial information requiring attention by targeted recipients "Update" – updates and supercedes the earlier message(s) identified in <cap:ref_id> "Cancel" – cancels the earlier message(s) identified in <cap:ref_id> "Ack" – acknowledges receipt and acceptance of the message(s) identified in <cap:ref_id> "Error" – indicates rejection of the message(s) identified in <cap:ref_id>; explanation should appear in <cap:msg_note>
cap:msg_note	Descriptive note	Text describing the purpose or significance of the message (primarily intended for use with Cancel and Error message types.)
cap:ref_id	ID of earlier message(s) referenced by this one.	The extended message ID (in the form <i>msg_id/sender_id</i> ) of an earlier message or messages referenced by this one. If multiple messages are referenced, they are separated by whitespace.
cap:incident_id	Reference name for incident	Text (used to collate multiple messages referring to different aspects of the same incident)

<b>Part 2 - “info” Block Elements</b> (mandatory elements are listed in <b>boldface</b> )		
<b>Tag Name</b>	<b>Purpose</b>	<b>Content</b>
cap:info	Container for information block	Contains “info” block elements within the “main” block. Multiple occurrences are permitted. If targeting of multiple “info” blocks <u>in the same language</u> overlaps, information in later blocks may expand but may not override the corresponding values in earlier ones. Each set of “info” blocks containing the same language identifier is to be treated as a separate sequence.
cap:language	Language for this block	Natural language identifier per RFC 1766. (If not present, assumed value is “en-US”)
<b>cap:event_cat</b>	<b>Category of event</b>	“Geo” – Geophysical (inc. landslide) “Met” – Meteorological (inc. flood) “Safety” – General emergency and public safety “Security” – Law enforcement, military, homeland and local/private security “Rescue” – Rescue and recovery “Fire” – Fire suppression and rescue “Health” – Medical and public health “Env” – Pollution and other environmental “Transport” – Public and private transportation “Infra” – Utility, telecommunication, other non-transport infrastructure “Other” – Other events
<b>cap:event_type</b>	<b>Specific type of event</b>	Text (may use specified nomenclature if available)
<b>cap:urgency</b>	<b>Urgency of this event</b>	“Ongoing” – refers to an actual event that has occurred recently or is occurring “Impending” – refers to an event that is imminent (within next hour) “Forecast” – refers to an event that is moderately probable in the near future “Past” – refers to an actual event that occurred in the past (not requiring further action) “Unknown” – urgency not known
<b>cap:severity</b>	<b>Severity of event</b>	“Extreme” – extraordinary threat to life or property “Severe” – significant threat to life or property “Moderate” – possible threat to life or property “Minor” – minimal threat to life or property “Unknown” – severity unknown
<b>cap:certainty</b>	<b>Likelihood of occurrence</b>	“High” – highly likely (p > ~ 85%) or certain “Moderate” – likely (p > ~50%) “Low” – possible but not likely (p <= ~50%) “Minimal” –not expected to occur (p ~ 0) “Unknown” – certainty unknown
cap:audience	Target audience description	Text
(continued)		

<b>“info” Block Elements (continued)</b>		
<b>Tag Name</b>	<b>Purpose</b>	<b>Attributes and Element Contents</b>
cap:target_code	System-specific targeting code(s)	Any system-specific code for message targeting, in the form “code_type=code” where “code_type” is a user-assigned designator for the target system (e.g., “pge_outage_block=50”). Designators may not include spaces or XML-restricted characters (<, >, &, ', "). Multiple instances may occur within a single “info” block.
cap:effective	Date/Time the message information takes effect	In ISO 8601 format. (If this item is not included, it is assumed the same as in <cap:sent>.)
cap:onset	Duration until expected beginning of event	In ISO 8601 format. (If this item is not included, it is assumed the same as in <cap:sent>.)
cap:expires	Date/Time when message no longer valid	In ISO 8601 format. (If this item is not provided, each recipient is free to set its own policy as to when the message is not longer in effect.)
cap:sender_desc	Name or description of message originator	Text
cap:headline	Headline for alert message	Text
cap:event_desc	Extended event description	Text.
cap:instruction	Recommended action to be taken by recipients	Text
cap:info_url	Link to additional information	A full absolute URI for an HTML page with additional or reference information
cap:image_url	Link to digital image file	A full absolute URI of an online image file
cap:audio_url	Link to digital audio file	A full absolute URI of an online audio file.
cap:contact	Contact information for follow-up and confirmation	Text
cap:parameter	Technical parameter associated with event	Parameter label / value pair(s) in the form “label=value” (Multiple instances may occur within a single “info” block.)

<b>Part 3 - “area” Block Elements</b> (mandatory elements are listed in <b>boldface</b> )		
<b>Tag Name</b>	<b>Purpose</b>	<b>Content</b>
cap:area	Container for “area” block	Contains “area” block elements within an “info” block. Multiple occurrences permitted, in which case the target area for the “info” block is the union of all the included “area” blocks. (May contain one and only one of a <cap:polygon>, <cap:radius> or a <cap:geo_code>.)
<b>cap:area_desc</b>	<b>Affected area description</b>	A text description of the affected area.
cap:polygon	Affected area as lat/lon polygon	A simple geographic polygon described by a whitespace-delimited list of latitude / longitude pairs expressed in decimal degrees (datum is WGS-84). Values within pairs are comma-delimited. Negative values (South / West) are signed.
cap:radius	Affected area as lat/lon point and radius	A circular area described by a comma-delimited latitude / longitude pair in decimal degrees, followed by a space and a radius in kilometers. Coordinates are in decimal degrees (WGS-84 datum). Negative coordinate values (South / West) are signed.
cap:geo_code	Geographic targeting code	Any geographically-based code to describe message target area, in the form “code_type=code” where “code_type” is a user-assigned abbreviation for the target system (e.g., “fips=06003”). Code-types may not include spaces or XML-restricted characters (<, >, &, ', ”).

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