

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. Currently it is undergoing refinement and standardization within the OASIS standards process.

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 0.8

This is a relatively minor update from version 0.7 incorporating inputs from the OASIS Emergency Management Notification Methods and Messages Subcommittee, the CAP Working Group and the participants in the CAP workshop at the 2003 Partnership for Public Warning Annual Meeting:

Changes in this update:

1. Added a “system” value option in the <msg_status/> element.
2. Added a conditional <restriction/> element in the <alert/> block
3. Added a conditional <address/> element in the <alert/> block
4. Revise the definition of the <msg_code/> element in the <alert/> block
5. Revised the definition of and values for the <urgency/> element in the <info/> block
6. Added optional <altitude/> and <max_altitude/> elements in the <area/> block

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

Part 1 – “alert” Block (Top-Level) Elements (mandatory elements are listed in boldface)		
Tag Name	Purpose	Content
cap:alert	Container for entire alert msg.	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>
cap:msg_id	Message ID	A number or string uniquely identifying this message, assigned by the sender. No spaces or restricted characters (< and &)
cap:sender_id	Sender ID	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
cap:sent	Date/Time when message was originated	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)
cap:msg_status	Appropriate handling of message	“Actual” – Actionable by all targeted recipients “Exercise” – Actionable only by designated exercise participants; exercise identifier should appear in <cap:msg_note> “System” – For messages that support alert network internal functions. “Test” – Technical testing only, all recipients disregard
cap:msg_scope	Intended distribution of message	“Public” – for general dissemination to unrestricted audiences “Restricted” – for dissemination only to users with a known operational requirement (see <restriction/>, below) “Private” – for dissemination only to specified addresses (see <address/>, below)
cap:restriction	Distribution rule	Text describing a rule limiting message dissemination. Used when <msg_scope/> value is “Restricted”
cap:address	Distribution list	A list of explicit recipient IDs or addresses. Used when <msg_scope/> value is “Private”
cap:msg_code	Message control code	Any user-defined flag or special code used to flag this message for special handling.
cap:msg_type	Nature of message	“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.)
(continued)		

"alert" Block Elements (continued)		
Tag Name	Purpose	Content
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)

Part 2 - “info” Block Elements (mandatory elements are listed in boldface)		
Tag Name	Purpose	Content
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”)
cap:event_cat	Category of event	“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
cap:event_type	Specific type of event	Text (may use specified nomenclature if available)
cap:urgency	Timeframe before responsive action must be taken	“Now” – Responsive action should be taken immediately “Soon” – Responsive action should be taken soon (within next hour) “Later” – Responsive action should be taken in the near future “Past” – Responsive action is no longer required “Unknown” – urgency not known
cap:severity	Severity of event	“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
cap:certainty	Likelihood of occurrence	“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)		

“info” Block Elements (continued)		
Tag Name	Purpose	Attributes and Element Contents
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.)

Part 3 - “area” Block Elements (mandatory elements are listed in boldface)		
Tag Name	Purpose	Content
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>.
cap:area_desc	Affected area description	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 (<, >, &, ', ").
cap:altitude	Specific or minimum altitude	In feet above mean sea level (per WGS-84 datum). If used with the <max_altitude/> element this value is the lower limit of a range. Otherwise, this value specifies a specific altitude.
cap:max_altitude	Maximum altitude	In feet above mean sea level (per WGS-84 datum). May only be used in combination with the <altitude/> element

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