Anatomy of a CAP Alert Message:
Mandatory Elements, Codified Values and Text Entry Elements

CAP alert messages must contain certain mandatory elements. And some of those elements must contain particular, prescribed values.

The mandatory elementals are highlighted in bold here:

alert
Message ID (identifier)
Sender ID (sender)
Sent Date/Time (sent)
Message Status (status)
Message Type (msgType)
Source (source)
Scope (scope)
Restriction (restriction)
Addresses (addresses)
Handling Code (code) *
Note (note)
Reference IDs (references)
Incident IDs (incidents)

Elements of a CAP Alert Message

Elements in **bold** are mandatory.

Asterisks * indicate that multiple instances of that element are permitted.

Element tag labels are in (parenthesis).

info *
Language (language)
Event Category (category) *
Event Type (event)
Response Type (responseType) *
Urgency (urgency)
Severity (severity)
Certainty (certainty)
Audience (audience)
Event Code (eventCode) *
Effective Date/Time (effective)
Onset Date/Time (onset)
Expiration Date/Time (expires)
Sender Name (senderName)
Headline (headline)
Event Description (description)
Instructions (instruction)
Information URL (web)
Contact Info (contact)
Parameter (parameter) *

resource *
Description (resourceDesc)
MIME Type (mimeType)
File Size (size)
URI (uri)
Dereferenced URI (derefUri)
Digest (digest)

area *
Area Description (areaDesc)
Area Polygon (polygon) *
Area Circle (circle) *
Area Geocode (geocode) *
Altitude (altitude)
Ceiling (ceiling)

The details of these elements and values are described in the OASIS (Organization for the Advancement of Structured Information Standards) document defining CAP version 1.2 (available on the OASIS website).

Values for Codified Elements

The following lists the codified elements and their prescribed values.

Message Status <status>
"Actual" - Actionable by all targeted recipients
"Exercise" - Actionable only by designated exercise participants; exercise identifier SHOULD appear in <note>
"System" - For messages that support alert network internal functions
"Test" - Technical testing only, all recipients disregard
"Draft" – A preliminary template or draft, not actionable in its current form

Message Type <msgType>
"Alert" - Initial information requiring attention by targeted recipients
"Update" - Updates and supercedes the earlier message(s) identified in <references>
"Cancel" - Cancels the earlier message(s) identified in <references>
"Ack" - Acknowledges receipt and acceptance of the message(s) identified in <references>
"Error" - Indicates rejection of the message(s) identified in <references>; explanation SHOULD appear in <note>

Scope <scope>
"Public" - For general dissemination to unrestricted audiences
"Restricted" - For dissemination only to users with a known operational requirement (calls for including <restriction>)
"Private" - For dissemination only to specified addresses (calls for including <addresses>)

Event Category <catagory>
"Geo" - Geophysical (including landslides)
"Met" - Meteorological (including floods)
"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
"CBRNE" – Chemical, Biological, Radiological, Nuclear or High-Yield Explosive threat or attack
"Other" - Other events

Response Type <responseType> - optional element
"Shelter" – Take shelter in place or per <instruction>
"Evacuate" – Relocate as instructed in the <instruction>
"Prepare" – Make preparations per the <instruction>
"Execute" – Execute a pre-planned activity identified in <instruction>
"Avoid" – Avoid the subject event as per the <instruction>
"Monitor" – Attend to information sources as described in <instruction>
"Assess" – Evaluate the information in this message. (This value SHOULD NOT be used in public warning applications.)
"AllClear" – The subject event no longer poses a threat or concern and any follow on action is described in <instruction>
"None" – No action recommended

Urgency <urgency>
"Immediate" - Responsive action should be taken immediately
"Expected" - Responsive action should be taken soon (within next hour)
"Future" - Responsive action should be taken in the near future
"Past" - Responsive action is no longer required

"Unknown" - Urgency not known

Severity <severity>
"Extreme" - Extraordinary threat to life or property
"Severe" - Significant threat to life or property
"Moderate" - Possible threat to life or property
"Minor" – Minimal to no known threat to life or property
"Unknown" - Severity unknown

Certainty <certainty>
"Observed" – Determined to have occurred or to be ongoing
"Likely" - Probability is greater than or equal to 50%
"Possible" - Probability is less than 50%
"Unlikely" - Not expected to occur
"Unknown" - Certainty unknown

Text Entry Elements

Aside from the codified elements, there are elements for entering information as text or as date and time values. The OASIS document describes the appropriate information to enter in these elements. Important ones are highlighted here:

Headline <headline>
A brief human-readable headline. Note that some displays (for example, short messaging service devices) may only present this headline; it should be made as direct and actionable as possible while remaining short. 160 characters may be a useful target limit for headline length.

Description <description>
An extended human readable description of the hazard or event that occasioned this message. This is where you describe the important information (who, what, when, and where) about the hazardous situation.

Instructions <instruction>
An extended human readable instruction to targeted recipients. This is where you place the important information (how and why) of your protective behavior instruction.

Area Description <areaDesc>
A text description of the affected area for human readers. Be as specific as possible. There are several elements related to **Area Description** that can be populated through mapping programs and can be machine interpreted (polygon, circle, geocode). Some warning systems use this information to provide a highlighted map of the area of concern or to send text messages to people within the area of concern.