



ATIS-0700014.v002

**ATIS Implementation Guidelines for CMSP Handling of
CMAS Supplemental Information Broadcast
Revision 2**

AMERICAN NATIONAL STANDARD FOR TELECOMMUNICATIONS



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Is an American National Standard developed by the **Wireless Technologies and Systems Committee (WTSC)**.

Published by

Alliance for Telecommunications Industry Solutions
1200 G Street, NW, Suite 500
Washington, DC 20005

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ATIS Implementation Guidelines for CMSP Handling of CMAS Supplemental Information Broadcast Revision 2

Alliance for Telecommunications Industry Solutions

Approved September, 2015

Abstract

This standard defines the implementation guidelines for the CMSP handling of CMAS supplemental information broadcast. While English-only CMAS messages are required per the FCC First Report and Order, the WARN Act states that commercial mobile service providers who elect to transmit emergency alerts may transmit in languages in addition to English to the extent practical and feasible. To support this WARN Act option, the CMSP Gateway shall have the capability to retrieve CMAS message text in Spanish.

Foreword

As a leading technology and solutions development organization, the Alliance for Telecommunication Industry Solutions (ATIS) brings together the top global information and communications technology (ICT) companies to advance the industry's most pressing business priorities. ATIS serves the public through improved understanding between service providers, customers, and manufacturers. The Wireless Technologies and Systems Committee (WTSC) develops and recommends standards and technical reports related to wireless and/or mobile services and systems, including service descriptions and wireless technologies. WTSC develops and recommends positions on related subjects under consideration in other North American, regional, and international standards bodies.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, WTSC, 1200 G Street NW, Suite 500, Washington, DC 20005.

At the time it approved this document, WTSC, which is responsible for the development of this Standard, had the following leadership:

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- P. Musgrove, WTSC SN Chair (AT&T)
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Implementation Guidelines for CMSP Handling of CMAS Supplemental Information Broadcast

1 Scope, Purpose, & Application

1.1 Scope

The scope of this standard is to provide implementation guidelines for the Commercial Mobile Service Provider (CMSP) handling of Commercial Mobile Alert System (CMAS) supplemental information broadcast for GSM, UMTS, and E-UTRAN systems.

ATIS-0700006 [Ref 2], ATIS-0700009 [Ref 4], and ATIS-0700010 [Ref 5] specify the CMSP handling of CMAS messages using Cell Broadcast Service (CBS) capabilities for GSM/UMTS and E-UTRA systems.

1.2 Purpose

This standard defines the implementation guidelines for the CMSP handling of CMAS supplemental information broadcast.

1.3 Application

While English-only CMAS messages are required per the FCC First Report and Order [Ref 7], the WARN Act states that commercial mobile service providers who elect to transmit emergency alerts may transmit in languages in addition to English, to the extent practical and feasible. To support this WARN Act option, the CMSP Gateway shall have the capability to retrieve CMAS message text in Spanish.

A CMSP shall define its own policy for the retrieval and transmission of CMAS messages in languages other than English. This CMSP policy includes whether to transmit the CMAS message in languages other than English and which geographic areas (e.g., region) to transmit in languages other than English.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this ATIS Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this ATIS Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

[Ref 1] J-STD-101, *Joint ATIS/TIA CMAS Alert Gateway to CMSP Gateway Interface Specification*; October, 2009 including J-STD-101.a, *Supplement A to J-STD-101, Joint ATIS/TIA CMAS Alert Gateway to CMSP Gateway Interface Specification*; August 2011 and including J-STD-101.b, *Supplement B to J-STD-101, Joint ATIS/TIA CMAS Alert Gateway to CMSP Gateway Interface Specification*; December 2012.¹

¹ This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) <<https://www.atis.org/docstore/product.aspx?id=24919>>

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[Ref 2] ATIS-0700006, *CMAS via GSM/UMTS Cell Broadcast Service Specification*; March, 2010 including ATIS-0700006.a, *Supplement A to ATIS-0700006, CMAS via GSM/UMTS Cell Broadcast Service Specification*; January 2013.²

[Ref 3] ATIS-0700007, *Implementation Guidelines and Best Practices for GSM/UMTS Cell Broadcast Service Specification*; October 2009.³

[Ref 4] ATIS-0700008, *Cell Broadcast Entity (CBE) to Cell Broadcast Center (CBC) Interface Specification*; March 2010.⁴

[Ref 5] ATIS-0700010, *CMAS via EPS Public Warning System Specification*; August 2010 including ATIS-0700010.a, *Supplement A to ATIS-0700010, CMAS via EPS Public Warning System Specification*; January 2013.⁵

[Ref 6] ATIS-0700012.v002, *Implementation Guidelines for CMAS Supplemental Information Retrieval, Revision 2*; September 2015.⁶

[Ref 7] FCC 08-99, *Federal Communications Commission First Report and Order In the Matter of The Commercial Mobile Alert System*; April 9, 2008.⁷

[Ref 8] ATIS-0700013, *Implementation Guidelines for Mobile Device Support for Multi-Language CMAS*; April 2012.⁸

[Ref 9] J-STD-100, *Joint ATIS/TIA CMAS Mobile Device Behavior Specification*; January 30, 2009 including J-STD-100.a, *Supplement A to J-STD-100, Joint ATIS/TIA CMAS Mobile Device Behavior Specification*; December 2012.⁹

[Ref 10] 3GPP TS 23.038, *3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Alphabets and language-specific information*.¹⁰

3 Definitions, Acronyms, & Abbreviations

3.1 Acronyms & Abbreviations

ATIS	Alliance for Telecommunications Industry Solutions
BSC	Base Station Controller
BTS	Base Transceiver System
CAP	Common Alert Protocol
CBC	Cell Broadcast Center

² This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) < <https://www.atis.org/docstore/product.aspx?id=25035> >

³ This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) < <https://www.atis.org/docstore/product.aspx?id=24998> >

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⁵ This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) < <https://www.atis.org/docstore/product.aspx?id=25424>>.

⁶ This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) < <https://www.atis.org/docstore/product.aspx?id=26126> >.

⁷ This document is available from the Federal Communications Commission. < <http://www.fcc.gov/> >

⁸ This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) < <https://www.atis.org/docstore/product.aspx?id=26127> >.

⁹ This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) < <https://www.atis.org/docstore/product.aspx?id=24590> >.

¹⁰ This document is available from the 3rd Generation Partnership Project (3GPP) < <http://www.3gpp.org/> >

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CBS	Cell Broadcast Service
CMAS	Commercial Mobile Alert System
CMSP	Commercial Mobile Service Provider
E-UTRAN	Evolved UMTS Terrestrial Radio Access Network
FCC	Federal Communications Commission
FIPS	Federal Information Processing Standard
GSM	Global System for Mobile Communications
GW	Gateway
ID	Identifier
IE	Information Element
LTE	Long Term Evolution
MME	Mobile Management Entity
PWS	Public Warning System
RMT	Required Monthly Test
RNC	Radio Network Controller
UE	User Equipment
UMTS	Universal Mobile Telecommunications System
WARN	Warning, Alert, & Response Network

4 Assumptions

1. The English CMAS alert message and the Spanish CMAS alert message will be broadcast as separate Cell Broadcast Messages.
2. The mobile device does not correlate the English and Spanish cell broadcast messages (see ATIS-0700013 [Ref 8]).
3. To the mobile device, the English alert message and the Spanish alert message will appear as multiple alert messages (see ATIS-0700013 [Ref 8]). When the mobile device receives both English and Spanish alert messages, it should perform the same actions (e.g., alerting, vibration cadence) that it performs when it receives multiple English alert messages (see J-STD-100 [Ref 9]).

5 Service Principles

The CMSP Gateway receives English CMAS alert messages from the Federal Alert Gateway. Depending on CMSP policy, the CMSP Gateway retrieves the equivalent Spanish CMAS alert messages as per ATIS-0700012.v002 [Ref 6].

5.1 Message Handling Principles

The CMSP Gateway shall handle the messages according to the following principles:

1. The CMSP Gateway will maintain the correlation of the English CMAS alert message with the equivalent Spanish CMAS alert message.
2. Upon the reception of a Cancel CMAS alert message, the CMSP Gateway will cancel the English CMAS alert message and will also cancel any equivalent Spanish message.
3. Upon reception of a CMAS Update alert message, the CMSP Gateway will first cancel the English CMAS alert message and will also cancel any equivalent Spanish CMAS alert message. After the cancellation, the CMSP Gateway will initiate messages for the updated English alert message and for the updated Spanish alert text message (if any).
4. It is not an error condition for an updated English CMAS alert message to not have an equivalent updated

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Spanish alert message when the original English CMAS alert message had an associate Spanish alert message.

5. It is not an error condition for an updated English CMAS alert message to have an equivalent updated Spanish alert message when the original English CMAS alert message did not have an equivalent Spanish alert message.
6. The alert area definition (e.g., FIPS code, polygon) received from the Federal Alert Gateway for the English CMAS alert message will be the same alert area definition used for the Spanish alert message.
7. The CMAS Alert expiry timer (which is translated to *Repetition Period* and *Number of Broadcasts* within the CMSP Handling of CMAS broadcast) for English CMAS message and the equivalent Spanish CMAS message will be same.

5.2 CMAS Alerts in English

In the United States, the presentation of CMAS alerts in English is mandatory for the mobile devices. For CMAS alerts broadcast in English, the associated CBS messages shall use the *Message Identifier* value in the range 4370-to-4382. The *Data Coding Scheme* IE of the associated CBS messages shall identify the language as *English*. The mobile devices shall present (i.e., display) the CBS message regardless of the language indicator, when that CBS message has the *Message Identifier* value in the range 4370-to-4382 (see ATIS-0700013 [Ref 8]).

5.3 CMAS Alerts in Spanish

For CMAS alerts broadcast in Spanish, the associated CBS messages shall use the *Message Identifier* value in the range 4383-to-4395. The *Data Coding Scheme* IE of the associated CBS messages identifies the language as *Spanish*.

The mobile devices shall use the pre-configured language setting, which indicates reception and presentation of Spanish, to determine that the CBS messages (carrying the CMAS alerts) with the *Message Identifier* value in the range 4383-to-4395 and with the *Data Coding Scheme* IE indicating the language as *Spanish* shall be presented (see ATIS-0700013 [Ref 8]).

5.4 Network Considerations

The CMSP Gateway shall use the *Message Identifier* value from the range 4370-to-4382 for CMAS alerts in English with the *Data Coding Scheme* IE indicating the language as *English*.

Table 5.1 – Message Identifiers for CMAS Alerts in English

CMAS MESSAGE CLASS	MESSAGE IDENTIFIER	MESSAGE IDENTIFY VALUE (DECIMAL)	SEVERITY	URGENCY	CERTAINTY
Presidential Alerts	MsgID1	4370	n/a	n/a	n/a
CMAS-Extreme Alerts	MsgID2	4371	Extreme	Immediate	Observed
	MsgID3	4372	Extreme	Immediate	Likely
CMAS-Severe Alerts	MsgID4	4373	Extreme	Expected	Observed
	MsgID5	4374	Extreme	Expected	Likely
	MsgID6	4375	Severe	Immediate	Observed
	MsgID7	4376	Severe	Immediate	Likely
	MsgID8	4377	Severe	Expected	Observed
	MsgID9	4378	Severe	Expected	Likely
Child Abduction	MsgID10	4379	n/a	n/a	n/a
RMT (see Note)	MsgID11	4380	n/a	n/a	n/a
CMAS-Exercise (see Note)	MsgID12	4381	n/a	n/a	n/a
CMSP-Reserved (see Note)	MsgID13	4382	n/a	n/a	n/a

NOTE: CMSP handling of these messages will be based on CMSP policy and is outside the scope of this Standard.

The CMSP Gateway shall use the *Message Identifier* value in the range 4383-to-4395 for CMAS alerts in Spanish with the *Data Coding Scheme* IE indicating the language as *Spanish*.

Table 5.2 – Message Identifiers for CMAS Alerts in Spanish

CMAS MESSAGE CLASS	MESSAGE IDENTIFIER	MESSAGE IDENTIFY VALUE (DECIMAL)	SEVERITY	URGENCY	CERTAINTY
Presidential Alerts	MsgID14	4383	n/a	n/a	n/a
CMAS-Extreme Alerts	MsgID15	4384	Extreme	Immediate	Observed
	MsgID16	4385	Extreme	Immediate	Likely
CMAS-Severe Alerts	MsgID17	4386	Extreme	Expected	Observed
	MsgID18	4387	Extreme	Expected	Likely
	MsgID19	4388	Severe	Immediate	Observed
	MsgID20	4389	Severe	Immediate	Likely
	MsgID21	4390	Severe	Expected	Observed
	MsgID22	4391	Severe	Expected	Likely
Child Abduction	MsgID23	4392	n/a	n/a	n/a
RMT (see Note)	MsgID24	4393	n/a	n/a	n/a
CMAS-Exercise (see Note)	MsgID25	4394	n/a	n/a	n/a
CMSP-Reserved (see Note)	MsgID26	4395	n/a	n/a	n/a

NOTE: CMSP handling of these messages will be based on CMSP policy and is outside the scope of this Standard.

5.5 Message Coding

The CMAS alert messages that are received from the Federal Alert Gateway are UTF-8 encoded (per J-STD-101 [Ref 1]). The CMSP shall transmit these messages in the default GSM 7-bit alphabet to the mobile device (per

ATIS 0700006 [Ref 2] and ATIS 0700010 [Ref 5]). UTF-8 characters that are not contained in the default GSM 7-bit alphabet may be represented by their closest approximation in the GSM 7-bit alphabet. The algorithm for the mapping of the UTF-8 alphabet to the GSM 7-bit alphabet is vendor implementation specific and is beyond the scope of this Standard.

6 Conceptual Views & Call Flows

This clause presents conceptual views and call flows for CMAS supplemental information broadcasts. Two types of mobile devices/UEs are shown: English UE and Spanish UE. An English UE is a mobile device/UE configured to present only English-language CMAS alerts. Such a device will discard CMAS alerts received in any other language (e.g., Spanish). A Spanish UE is configured to receive and present both English-language and Spanish-language alerts.

The *Message Identifier* values 4370-to-4382 (shown as {4370} within the call flows) are used for English-language CMAS Alerts. The *Message Identifier* values 4383-to-4395 (shown as {4383} within the call flows) are used for Spanish-language CMAS Alerts.

6.1 CMAS Alert Broadcasting in English & Spanish – Conceptual View

The following figure presents a conceptual view of CMAS alert broadcasting in English and Spanish. The figure does not assume any implementation method of CMAS alert broadcasting in English and Spanish within the CMSP network infrastructure.

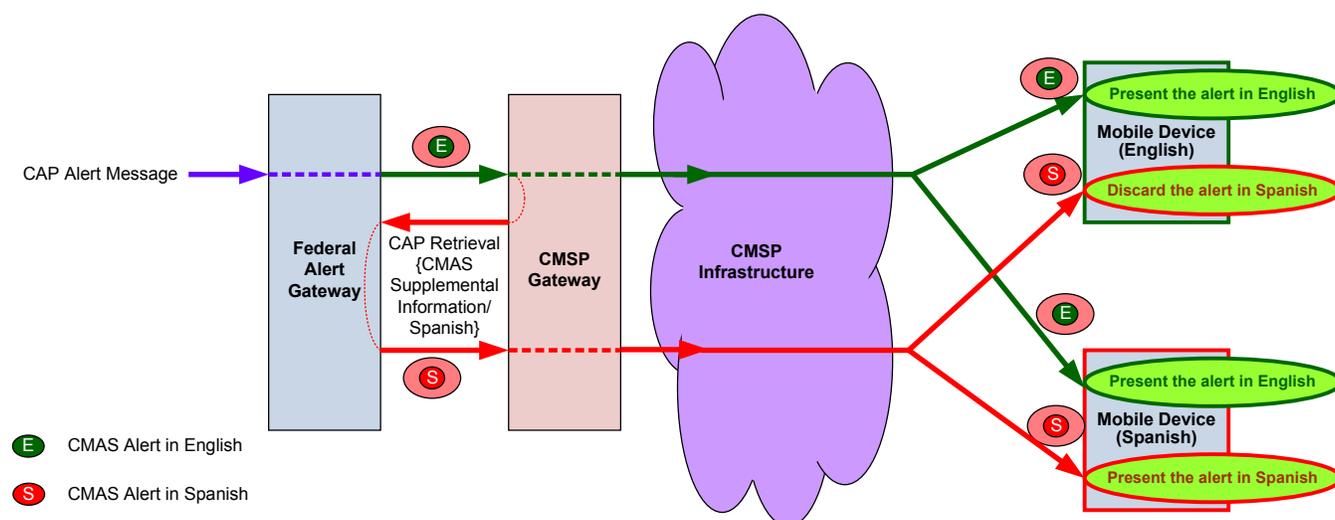


Figure 6.1 – Conceptual View of CMAS Alert Broadcasting in English and Spanish

When a CMAS alert is initiated, the Federal Alert Gateway receives a CAP message with the alert information. The Federal Alert Gateway stores supplemental alert information (e.g., Spanish-language alert), if available in the original CAP message it receives from the alert originator. The Federal Alert Gateway sends the English-language CMAS alert information to the CMSP Gateway with a URI address where the Spanish language alert text is stored within the CMAC_note field of CMAC message.

The CMSP Gateway broadcasts the CMAS alert in English (per ATIS-0700006 [Ref 2], ATIS-0700007 [Ref 3], ATIS-0700008 [Ref 4], and ATIS-0700010 [Ref 5]). If CMAS alert broadcasting in Spanish is required (i.e., based on CMSP policy) and if the CMAC_note indicating that Spanish alert text is available along with the URI where it is stored is received in the CMAC message, then the CMSP Gateway uses CAP message retrieval (see ATIS-0700012 [Ref 6]) to obtain the CMAS supplemental information for the CMAS alert in Spanish. The Federal Alert Gateway would return the CMAS Supplemental Information for the CMAS alert in Spanish. If there is no Spanish alert text, then the Federal Alert Gateway does not include the CMAC_note and the CMSP Gateway

does not attempt to retrieve the CMAS supplemental information. The broadcast of CMAS alert in English has no impact due to absence or presence of a Spanish language alert text.

The CMSP Gateway broadcasts the CMAS alert in Spanish (if received from the Federal Alert Gateway) as it broadcast the CMAS alerts in English (i.e., per ATIS-0700006 [Ref 2], ATIS-0700007 [Ref 3], ATIS-0700008 [Ref 4], and ATIS-0700010 [Ref 5]).

The English UE presents the CMAS alerts broadcast in English and discards CMAS alerts received in any other languages (e.g., Spanish). The Spanish UE presents the CMAS alerts broadcast in English and in Spanish.

These CMAS alert broadcasting methods within the CMSP infrastructure ensure that the same CMAS alert message broadcast in two different languages are not the target of duplication detection techniques used within the mobile devices. The CMAS alerts broadcast in English and Spanish will have two different combined values of *Message Identifier* and *Serial Number*. Within CMAS alert broadcasting methods, the CMSP Gateway determines the *Message Identifier* value and the CBC assigns the *Serial Number* value for a CBS message.

The language field in the *Data Coding Scheme* identifies the language as English for the CMAS alert message in English. For implementation purposes, the actual *Data Coding Scheme* value for English is '(01)hex' [Ref 10]. The same field identifies the language as Spanish for the CMAS alert message in Spanish. For implementation purposes, the actual *Data Coding Scheme* value for Spanish is '(04)hex' [Ref 10].

In the subsequent clauses, wherever Spanish language is mentioned, it is presumed that such information is available at the Federal Alert Gateway.

6.2 End-to-End Conceptual View of CMAS Alert Broadcast in English & Spanish

This call flow illustrates a conceptual end-to-end view of a CMAS alert broadcast in both English and Spanish. The values shown for the *Message Number* and the *Serial Number* are just examples.

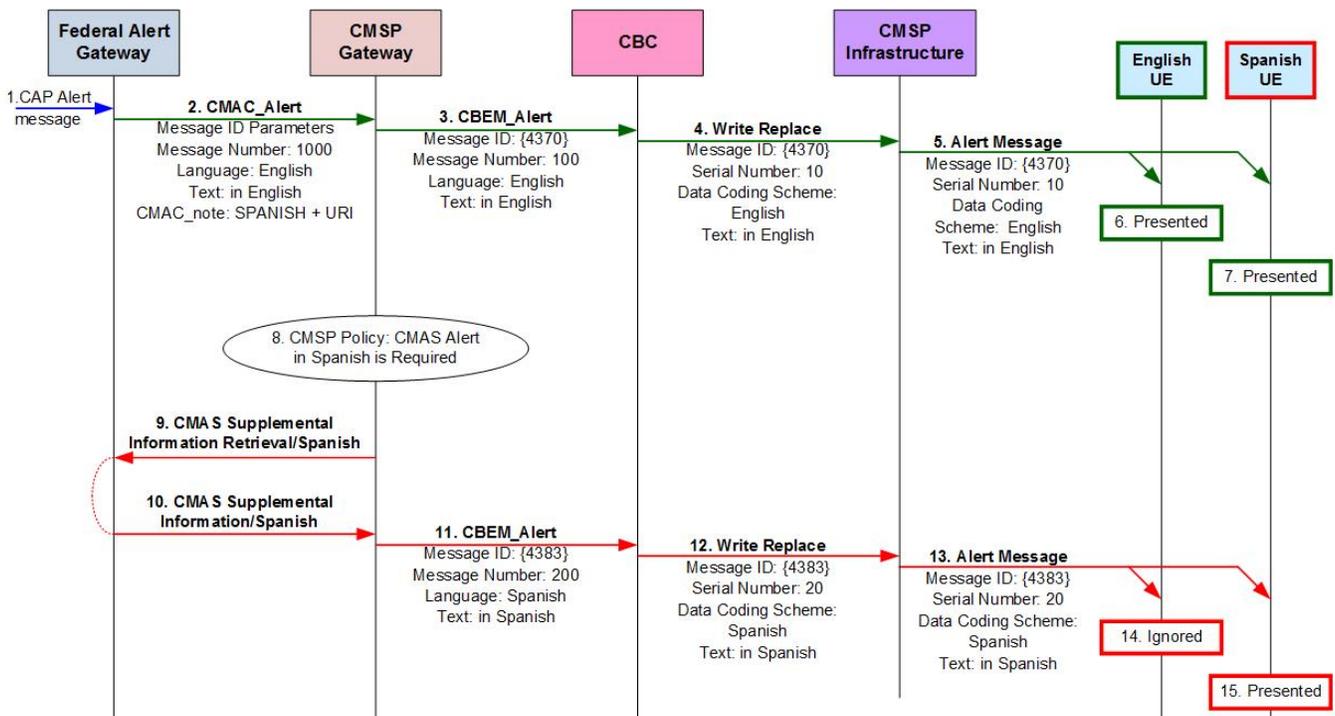


Figure 6.2 – End-to-End Conceptual View CMAS Alert Broadcast in English and Spanish

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Steps 8, 9, and 10 illustrate the Supplemental Information Retrieval for CMAS Alert in Spanish and may occur any time after the step 2 (but before step 11). The subsequent broadcasting of the CMAS Alert in Spanish (steps 11 to 15) may occur in parallel with steps 3 to 7 that show the broadcasting of CMAS Alerts in English.

The details of the CMAS Supplementation Information Retrieval for CMAS Alert in Spanish are illustrated in ATIS-0700012 [Ref 6]. Clause 6.2.1 *English-Language CMAS Alert Broadcast Call Flow* illustrates the CMAS Alert broadcast in English and Clause 6.2.2 *Spanish-Language CMAS Alert Broadcast Call Flow* illustrates the CMAS Alert broadcast in Spanish.

Descriptive Text for the Steps

1. The Federal Alert Gateway receives a CMAS CAP alert message.
2. The Federal Alert Gateway sends a CMAC_Alert message to the CMSP Gateway. The CMAC_Alert message indicates the language as English and contains the displayable CMAS alert text in English. In this example, the *Message Number* associated with the CMAC_Alert message is 1000. The CMAC_Alert message also includes a CMAC_note indicating the presence of a Spanish language alert text along with the URI where the Spanish language alert text is stored in the Federal Alert Gateway.
3. The CMSP Gateway sends a CBEM_Alert message to the CBC. The CBEM_Alert message indicates the language as English {(01)hex} and contains the displayable CMAS alert text in English. The *Message Identifier* value is in the range 4370-to-4382. In this example, the *Message Number* associated with the CBEM_Alert message is 100.
4. The CBC sends a Write-Replace message to the CMSP Infrastructure. The *Data Coding Scheme* IE identifies the language as English {(01)hex} with the displayable CMAS alert text in English. The *Message Identifier* value is in the range 4370-to-4382 (same as in step 3). In this example, the *Serial Number* is 10.
5. The Alert Message is broadcast and is received by the English UE and Spanish UE. The *Data Coding Scheme* IE identifies the language as English with the displayable CMAS alert text in English. The *Message Identifier* value is in the range 4370-to-4382 (same as in step 4). The *Serial Number* is 10 (same as in step 4).
6. The English UE presents (i.e., displays) the CMAS alert text in English to the user.
7. The Spanish UE presents (i.e., displays) the CMAS alert text in English to the user.
8. The CMSP policy indicates that the CMAS alert message may also have to be broadcast with CMAS alert text in Spanish.
9. Since the CMAC_note indicates the presence of a Spanish language alert text, the CMSP Gateway retrieves the CMAS alert text in Spanish from the Federal Alert Gateway using the CMAS Supplemental Information Retrieval mechanism (which, in turn, uses the CAP retrieval method). The CMSP Gateway supplies the URI that it received in step 2 to the Federal Alert Gateway.
10. The Federal Alert Gateway returns the CMAS Supplemental Information containing the CMAS alert text in Spanish to the CMSP Gateway.
11. The CMSP Gateway sends a CBEM_Alert message to the CBC. The CBEM_Alert message indicates the language as Spanish and contains the displayable CMAS alert text in Spanish. The *Message Identifier* value is in the range 4383-to-4395. In this example, the *Message Number* associated with the CBEM_Alert message is 200.
12. The CBC sends a Write-Replace message to the CMSP Infrastructure. The *Data Coding Scheme* IE identifies the language as Spanish {(04)hex} with the displayable CMAS alert text in Spanish. The *Message Identifier* value is in the range 4383-to-4395 (same as in step 11). In this example, the *Serial Number* is 20.
13. The Alert Message is broadcast and is received by the English UE and Spanish UE. The *Data Coding Scheme* IE identifies the language as Spanish {(04)hex} with the displayable CMAS alert text in Spanish. The *Message Identifier* value is in the range 4383-to-4395 (same as in step 12). The *Serial Number* is 20 (same as in step 12).
14. The English UE discards the message without presenting (i.e., without displaying) the CMAS alert text in Spanish to the user.
15. The Spanish UE presents (i.e., displays) the CMAS alert text in Spanish to the user.

6.2.1 English-Language CMAS Alert Broadcast Call Flow

This flow illustrates an English-language CMAS Alert broadcast.

The value 100 for the *Message Number* and the value 10 for the *Serial Number* are just examples. A combination of *Message ID* and *Serial Number* uniquely identify a Cell Broadcast Service (CBS) message for a given area.

The language field in the *Data Coding Scheme* (i.e., based on the *CMAC_text_language* field of the *CMAC_Alert* message) identifies the language as English.

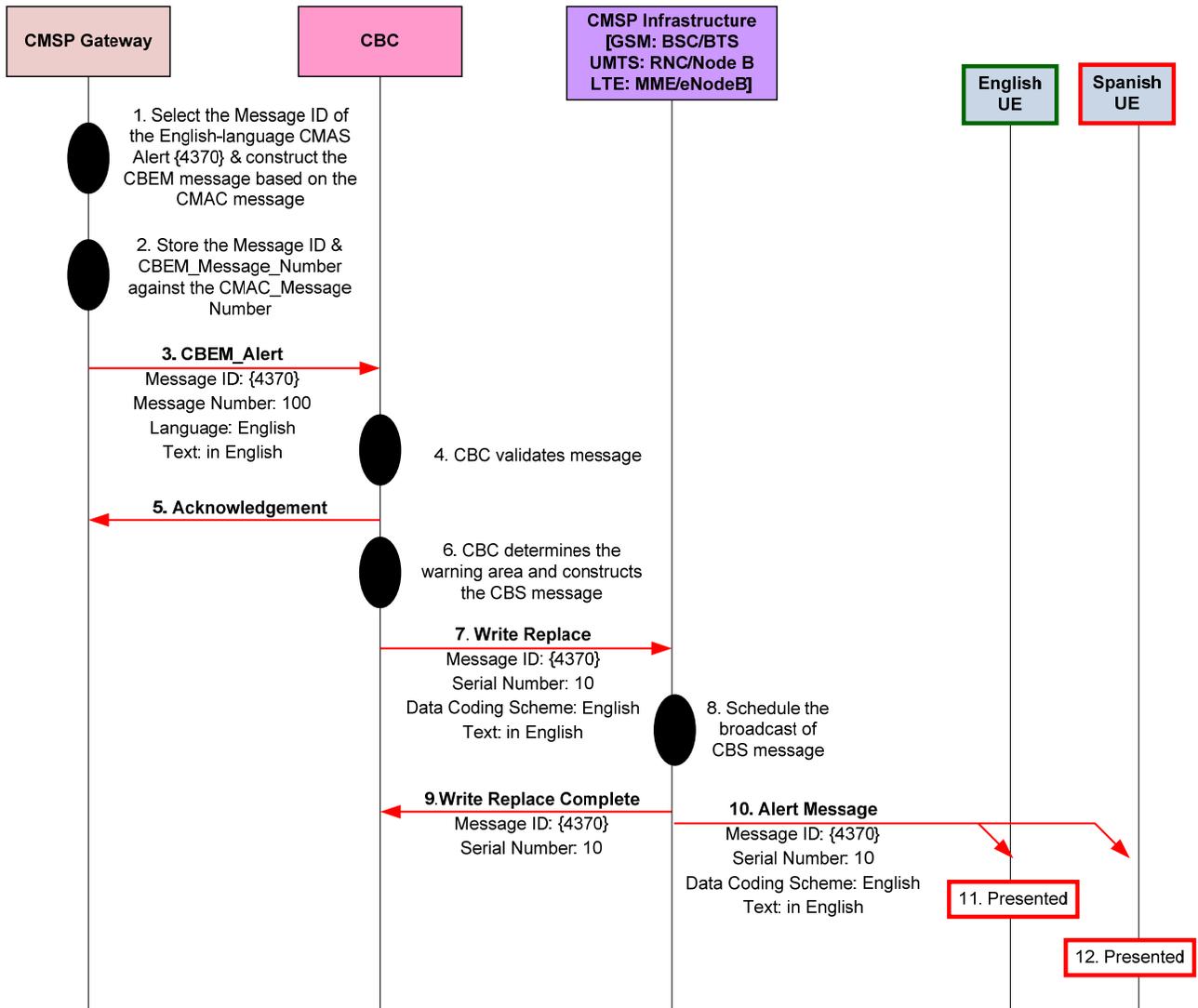


Figure 6.3 – English-Language CMAS Alert Broadcast Call Flow

Descriptive Text for the Steps

In GSM and UMTS, the CMAS alert message is broadcast over the air using the Cell Broadcast Service (CBS) capabilities. In E-UTRAN, the CMAS alert message is broadcast over the air as per the public warning system (PWS) message delivery mechanism.

1. The CMSP Gateway selects the *Message Identifier* value for the message based on the Urgency, Severity, Certainty, and Special Handling parameters received in the CMAC message for English language (Refer to *Table 5.1: Message Identifiers for CMAS Alerts in English*). The selected *Message Identifier* value is in the range 4370-to-4382. The CMSP Gateway then constructs the CBEM message based on the parameters received in the CMAC message.

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2. The CMSP Gateway maintains an internal mapping between the *Message Number* associated with the CMAC message and the *Message Identifier* & *Message Number* associated with the CBEM message. This enables the CMSP Gateway to later retrieve the CBEM *Message Identifier* and *Message Number* message associated with the *Message Number* received in the CMAC message.
3. The CMSP Gateway sends a CBEM_Alert message to the CBC. The *Data Coding Scheme* IE identifies the language as English with the displayable CMAS alert text in English. The *Message Identifier* value is in the range 4370-to-4382. In this example, the *Message Number* associated with the CBEM_Alert message is 100.
4. The CBC validates the CBEM_Alert message.
5. The CBC sends an acknowledgement to the CMSP Gateway to indicate a successful receipt of the CBEM_Alert message.
6. The CBC determines the warning area to which the CMAS alert message is to be broadcast and then constructs the CBS message. The CBC selects a *Serial Number* for the CBS message. In this example, the *Serial Number* is 10.
7. The CBC sends a Write-Replace message to the CMSP Infrastructure. The *Data Coding Scheme* IE identifies the language as English {(01)hex} with the displayable CMAS alert text in English. The *Message Identifier* value is in the range 4370-to-4382 (same as in step 3). The *Serial Number* is 10.
Within the CMSP Infrastructure, the node that receives the Write-Replace message varies based on the access technology. For GSM, it is the BSC. For UMTS, it is the RNC. For E-UTRAN, it is the MME.
The actual name of the message (and the format) will vary based on the technology. For GSM/UMTS, the message name is WRITE-REPLACE. For E-UTRAN, the message name is WRITE-REPLACE WARNING REQUEST.
8. The CMSP Infrastructure schedules the CBS message for broadcast. In GSM, the BSC schedules the CBS message broadcasts. In UMTS, the RNC schedules the CBS message broadcasts. In E-UTRAN, the eNodeB schedules the PWS message broadcasts.
9. The CMSP Infrastructure node sends an acknowledgement to the CBC using a Write-Replace Complete message as the response. The actual name of the message will vary based on the node that is sending the response message. For GSM/UMTS, the BSC/RNC sends a WRITE-REPLACE COMPLETE message. For E-UTRAN, the MME sends a WRITE-REPLACE WARNING RESPONSE message (eNodeB also sends WRITE-REPLACE WARNING RESPONSE message to MME).
10. The Alert Message is broadcast and is received by the English UE and the Spanish UE. The *Data Coding Scheme* IE identifies the language as English {(01)hex} with the displayable CMAS alert text in English. The *Message Identifier* value is in the range 4370-to-4382 (same as in step 7). The *Serial Number* is 10 (same as in step 7).
11. The English UE presents (i.e., displays) the CMAS alert text in English to the user.
12. The Spanish UE presents (i.e., displays) the CMAS alert text in English to the user.

6.2.2 Spanish-Language CMAS Alert Broadcast Call Flow

This flow illustrates the Spanish-language CMAS Alert broadcast.

The value 200 for the *Message Number* and the value 20 for the *Serial Number* are just examples. A combination of *Message ID* and *Serial Number* uniquely identify a CBS message for a given area.

The language field in the *Data Coding Scheme* IE identifies the language as Spanish. For Spanish-language CMAS alerts, the coding of the *Data Coding Scheme* is not based on the *CMAC_text_language* field of the *CMAC_Alert* message because the Spanish-language CMAS alert message is acquired by the CMSP GW via the CAP Retrieval mechanism.

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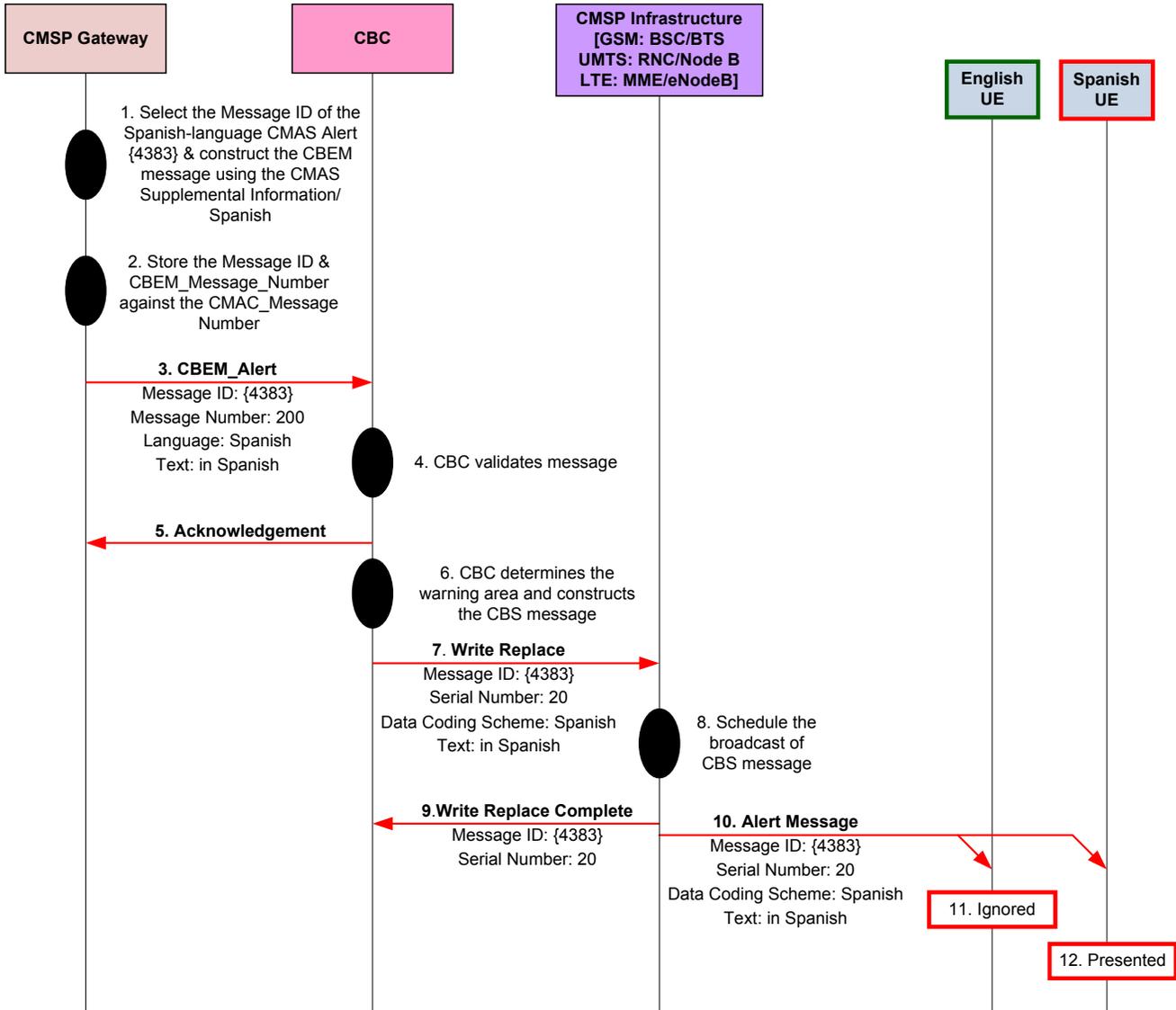


Figure 6.4 – Spanish-Language CMAS Alert Broadcast Call Flow

The broadcasting of CMAS Alerts in English (Figure 6.3: English-Language CMAS Alert Broadcast Call Flow) and CMAS Alerts in Spanish (Figure 6.4: Spanish-Language CMAS Alert Broadcast Call Flow) could occur in parallel depending on the implementation.

Descriptive Text for the Steps

In GSM and UMTS, the CMAS alert message is broadcast over the air using the Cell Broadcast Service (CBS) capabilities. In E-UTRAN, the CMAS alert message is broadcast over the air using the public PWS message delivery mechanism.

1. The CMSP Gateway selects the *Message Identifier* value for the message based on the Urgency, Severity, Certainty, and Special Handling parameters received in the CMAC message. For Spanish-language alerts, refer to *Table 5.2, Message Identifiers for CMAS Alerts in Spanish*. The selected *Message Identifier* value is in the range 4383-to-4395. The CMSP Gateway then constructs the CBEM message based on the parameters received in the CMAC message with the exception of language related settings.

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2. The CMSP Gateway maintains an internal mapping between the *Message Number* associated with the CMAC message and the *Message Identifier & Message Number* associated with the CBEM message. This enables the CMSP Gateway to later retrieve the CBEM *Message Identifier* and *Message Number* associated with the *Message Number* received in the CMAC message.
3. The CMSP Gateway sends a CBEM_Alert message to the CBC. The *Data Coding Scheme* IE identifies the language as Spanish with the displayable CMAS alert text in Spanish. The *Message Identifier* value is in the range 4383-to-4395. In this example, the *Message Number* associated with the CBEM_Alert message is 200.
4. The CBC validates the CBEM_Alert message.
5. The CBC sends an acknowledgement to the CMSP Gateway to indicate the successful receipt of the CBEM_Alert message.
6. The CBC determines the warning area to which the CMAS alert message is to be broadcast and then constructs the CBS message. The CBC selects a *Serial Number* for the CBS message. In this example, the *Serial Number* is 20.
7. The CBC sends a Write-Replace message to the CMSP Infrastructure. The *Data Coding Scheme* IE identifies the language as Spanish {(04)hex} with the displayable CMAS alert text in Spanish. The *Message Identifier* value is in the range 4383-to-4395 (same as in step 3). The *Serial Number* is 20.

Within the CMSP Infrastructure, the node that receives the Write-Replace message varies based on the access technologies. For GSM, it is the BSC. For UMTS, it is the RNC. For E-UTRAN, it is the MME.

The actual name of the message and the format will vary based on the technology. For GSM/UMTS, the message name is WRITE-REPLACE. For E-UTRAN, the message name is WRITE-REPLACE WARNING REQUEST.

8. The CMSP Infrastructure schedules the CBS message for broadcasts. In GSM, the BSC schedules the message broadcasts. In UMTS, the RNC schedules the CBS message broadcasts. In E-UTRAN, the eNodeB schedules the PWS message broadcasts.
9. The CMSP Infrastructure node sends an acknowledgement to the CBC using a Write-Replace Complete message as the response. The actual name of the message will vary based on the node that is sending the response message. For GSM/UMTS, the BSC/RNC sends the WRITE-REPLACE COMPLETE message. For E-UTRAN, the MME sends WRITE-REPLACE WARNING RESPONSE message (eNodeB also sends a WRITE-REPLACE WARNING RESPONSE to the MME).
10. The Alert Message is broadcast and is received by the English UE and the Spanish UE. The *Data Coding Scheme* IE identifies the language as Spanish {(04)hex} with the displayable CMAS alert text in Spanish. The *Message Identifier* value is in the range 4383-to-4395 (same as in step 7). The *Serial Number* is 20 (same as in step 7).
11. The English UE discards the message since the Spanish language is not configured as the additional language for CMAS.
12. The Spanish UE presents (displays) the CMAS alert text in Spanish to the user.

6.3 End-to-End Conceptual View of CMAS Alert Update in English & Spanish

This flow illustrates a conceptual end-to-end view of CMAS Alert Update where the updated CMAS Alert is broadcast in English and in Spanish.

The values of the *Message Number*, *Referenced Message Number*, and *Serial Number* are just examples.

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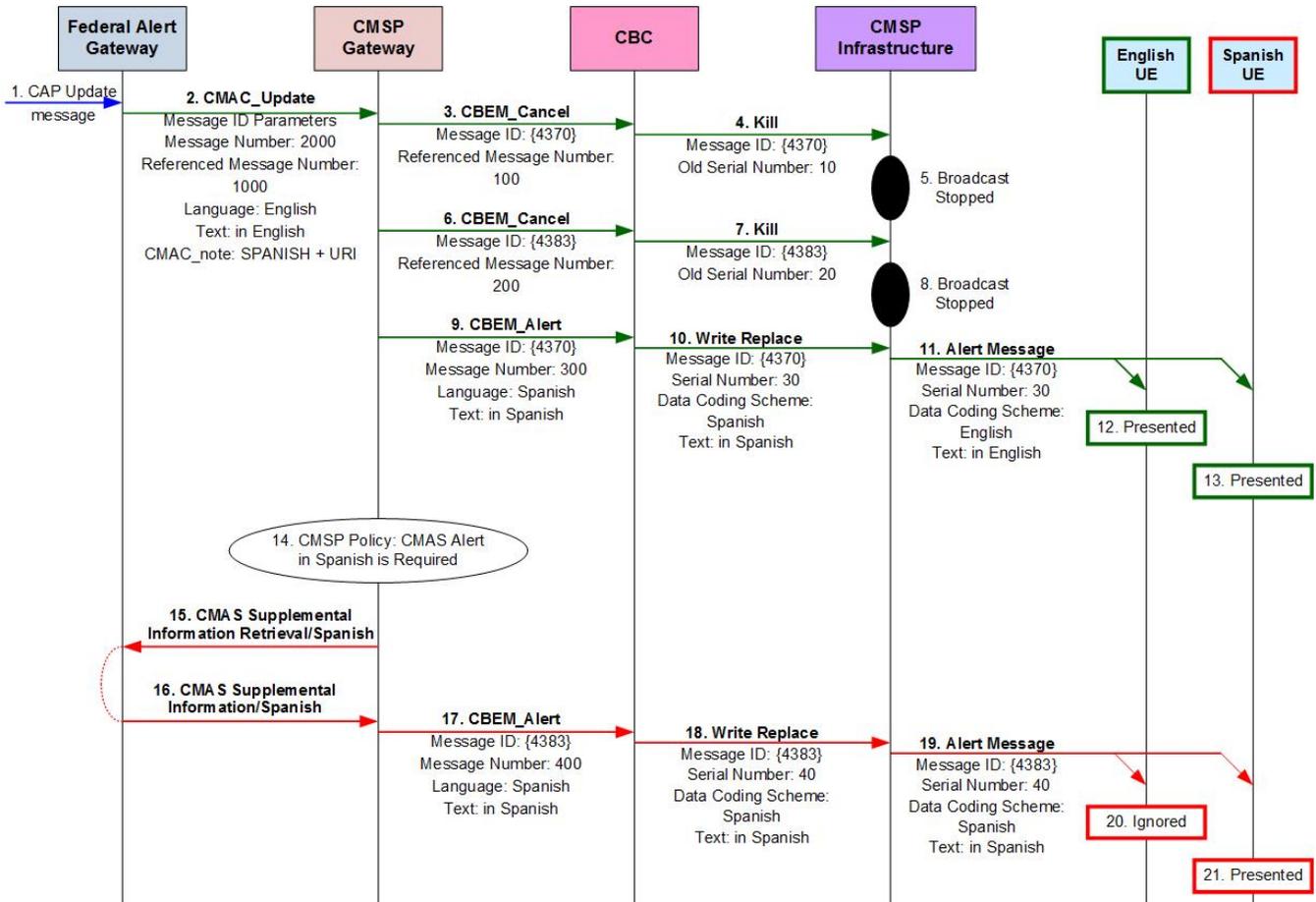


Figure 6.5 – End-to-End Conceptual View CMAS Alert Update in English and Spanish

The cancellation of the previous Spanish-language CMAS Alert (steps 6, 7, and 8) may occur in parallel with the cancellation of the previous English-language CMAS alert (steps 3, 4, and 5). Steps 15, 16, and 17 that illustrate the Supplemental Information Retrieval for the Spanish-language CMAS Alert may occur any time after step 2 (but before step 18). The subsequent broadcasting of the updated Spanish-language CMAS Alert (steps 18-to-21) may occur in parallel with steps 9-to-13 that show the broadcasting of the updated English-language CMAS Alert. If the original CMAS alert message had both English language text and Spanish language text, but the updated CMAS alert message had only English language text, the CMSP Gateway would still cancel the broadcast of the Spanish language text, but would broadcast only the updated English language text. In the same way if the original CMAS alert message did not have Spanish alert text, but the updated CMAS alert message has an associated Spanish language text, the CMSP Gateway would broadcast updated English language text and the new Spanish language text. This basically means that the CMSP handling of broadcast of Spanish language alert text when an updated CMAS alert is received is independent of whether or not the original CMAS alert had an associated Spanish language text.

The details of the CMAS Supplementation Information Retrieval for CMAS Alert in Spanish are described in ATIS-0700012 [Ref 6]. Clause 6.4.1 *Cancellation CMAS Alert Broadcasts in English and Spanish Call Flow* illustrates the steps involving the cancellation of previous Spanish-language and English-language CMAS Alert broadcasts in English and Spanish. Clause 6.2.1 *English-Language CMAS Alert Broadcast Call Flow* illustrates the broadcast of the updated English-language CMAS Alert and Clause 6.2.2 *Spanish-Language CMAS Alert Broadcast Call Flow* illustrates the broadcast of the updated Spanish-language CMAS Alert.

The CBC ensures that the combination of *Message ID* and *Serial Number* of the previous CMAS Alert (English or Spanish) and the combination of *Message ID* and *Serial Number* of the updated CMAS Alert (English or Spanish) are different. For example, if the *Message ID* of the previous and updated CMAS Alert (English or Spanish) are the same, and if the *Serial Number* of the previous English-language CMAS Alert is 10, then the *Serial Number* assigned to the updated English-language CMAS Alert will not be 10. For example, it could be 30. Likewise, if

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the *Serial Number* of the previous Spanish-language CMAS Alert is 20, then the *Serial Number* assigned to the updated Spanish-language CMAS Alert will not be 20. For example, it could be 40.

Descriptive Text for the Steps

For the execution of a CMAS alert update, the CMSP Gateway uses a two-step method: 1) stop broadcasting the current CMAS alert message; and 2) initiate the steps to broadcast a new CMAS alert message with the updated CMAS alert text. If two CMAS messages are being broadcast (English and Spanish) for a previously received Alert or Update message, the CMSP Gateway stops broadcasting both CMAS messages (English and Spanish).

1. The Federal Alert Gateway receives an update of a previously received CMAS alert or CMAS alert update message.
2. The Federal Alert Gateway sends a CMAC_Update message to the CMSP Gateway. The CMAC_Update message indicates the language as English and contains the updated displayable CMAS alert text in English. In this example, the *Message Number* associated with the CMAC_Update message is 2000. The *Referenced Message Number* (i.e., the *Message Number* associated with the previous CMAC_Alert or CMAC_Update message that is being updated now) is 1000. The CMAC_Update message also includes a CMAC_note indicating the presence of a Spanish language alert text along with the URI where the Spanish language alert text is stored in the Federal Alert Gateway.
3. The CMSP Gateway sends a CBEM_Cancel message to the CBC. The *Message Identifier* value of the to-be-cancelled CMAS alert message is in the range 4370-to-4382. The *Referenced Message Number* (i.e., the *Message Number* associated with the CBEM message that has the to-be-cancelled CMAS alert message) is 100. The CMAS alert text of the to-be-cancelled message is in English (but no such indication is required in the CBEM_Cancel message).
4. The CBC sends a Kill message to the CMSP Infrastructure. The *Message Identifier* value of the to-be-cancelled CBS message is in the range 4370-to-4382. The *Old Serial Number* (i.e., the *Serial Number* associated with the to-be-cancelled CBS message) is 10.
5. The CMSP Infrastructure stops broadcasting the CBS message with the indicated *Message Identifier* value and the *Old Serial Number*. Thus, the broadcasting of the CMAS alert message in English is cancelled.
6. The CMSP Gateway sends a CBEM_Cancel message to the CBC. The *Message Identifier* value of the to-be-cancelled CMAS alert message is in the range 4383-to-4395. The *Referenced Message Number* (i.e., the *Message Number* associated with the CBEM message that has the to-be-cancelled CMAS alert message) is 200. The CMAS alert text of the to-be-cancelled message is in Spanish (but no such indication is required in the CBEM_Cancel message).
7. The CBC sends a Kill message to the CMSP Infrastructure. The *Message Identifier* value of the to-be-cancelled CBS message is in the range 4383-to-4395. The *Old Serial Number* (i.e., the *Serial Number* associated with the to-be-cancelled CBS message) is 20.
8. The CMSP Infrastructure stops broadcasting the CBS message with the indicated *Message Identifier* value and the *Old Serial Number*. Thus, the broadcasting of CMAS alert message in Spanish is cancelled.
9. The CMSP Gateway sends a CBEM_Alert message to the CBC. The CBEM_Alert message indicates the language as English and contains the CMAS alert text in English. The *Message Identifier* value is in the range 4370-to-4382. In this example, the *Message Number* associated with the CBEM_Alert message is 300.
10. The CBC sends a Write-Replace message to the CMSP Infrastructure. The *Data Coding Scheme* IE identifies the language as English {(01)hex} with the displayable CMAS alert text in English. The *Message Identifier* value is in the range 4370-to-4382 (same as in step 9). In this example, the *Serial Number* is 30.
11. The Alert Message is broadcast and is received by the English UE and the Spanish UE. The *Data Coding Scheme* IE identifies the language as English {(01)hex} with the displayable CMAS alert text in English. The *Message Identifier* value is in the range 4370-to-4382 (same as in step 10). The *Serial Number* is 30 (same as in step 10).
12. The English UE presents (i.e., displays) the CMAS alert text in English to the user.
13. The Spanish UE presents (i.e., displays) the CMAS alert text in English to the user.

14. The CMSP policy indicates that the CMAS alert message may also have to be broadcast with Spanish-language CMAS alert text.
15. Since the CMAC_note indicates the presence of a Spanish language alert text, the CMSP Gateway retrieves the updated CMAS alert text in Spanish from the Federal Alert Gateway using the CMAS Supplemental Information Retrieval mechanism (which, in turn, uses the CAP retrieval method). The CMSP Gateway supplies the URI that it received in step 2 to the Federal Alert Gateway.
16. The Federal Alert Gateway returns the CMAS Supplemental Information containing the updated Spanish-language CMAS alert text to the CMSP Gateway.
17. The CMSP Gateway sends a CBEM_Alert message to the CBC. The CBEM_Alert message contains the Spanish-language CMAS alert text. The *Message Identifier* value is in the range 4383-to-4395. In this example, the *Message Number* associated with the CBEM_Alert message is 400.
18. The CBC sends a Write-Replace message to the CMSP Infrastructure. The *Data Coding Scheme* IE identifies the language as Spanish {(04)hex} with the displayable CMAS alert text in Spanish. The *Message Identifier* value is in the range 4383-to-4395 (same as in step 17). In this example, the *Serial Number* is 40.
19. The Alert Message is broadcast and is received by the English UE and the Spanish UE. The *Data Coding Scheme* IE identifies the language as Spanish {(04)hex} with the displayable CMAS alert text in Spanish. The *Message Identifier* value is in the range 4383-to-4395 (same as in step 18). The *Serial Number* is 40 (same as in step 18).
20. The English UE discards the message without presenting (i.e., without displaying) the CMAS alert text in Spanish to the user.
21. The Spanish UE presents (i.e., displays) the Spanish-language CMAS alert text to the user.

6.4 End-to-End Conceptual View of Cancellation of CMAS Alert Broadcasts in English & Spanish

This call flow illustrates a conceptual end-to-end view of a CMAS Alert in English and in Spanish being cancelled. The values shown for *Referenced Message Number* and *Old Serial Number* are just examples.

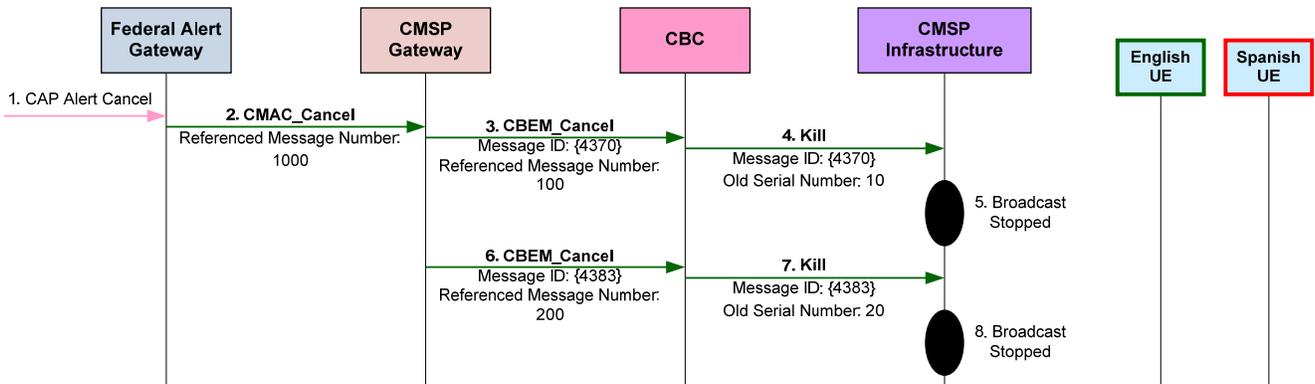


Figure 6.6 – End-to-End Conceptual View of Cancellation of CMAS Alert Broadcasts in English and Spanish

Steps 6, 7, and 8 illustrate the Cancellation of the Spanish-language CMAS Alert broadcast and may occur in parallel with steps 3, 4, and 5 that show the cancellation of English-language CMAS Alert broadcast.

Clause 6.4.1 *Cancellation CMAS Alert Broadcasts in English and Spanish Call Flow* illustrates the cancellation of CMAS Alert broadcasts in English and Spanish.

Descriptive Text for the Steps

If two CMAS alert messages are being broadcast (English and Spanish) for a previously received Alert or Update message, then the CMSP Gateway will stop the broadcasting both the CMAS alert messages (English and Spanish).

1. The Federal Alert Gateway receives a cancel request for a previously received CMAS alert or a CMAS alert update message.
2. The Federal Alert Gateway sends a CMAC_Cancel message to the CMSP Gateway. The *Referenced Message Number* (i.e., the *Message Number* associated with the previous CMAC_Alert or CMAC_Update message that is being cancelled now) is 1000.
3. The CMSP Gateway sends a CBEM_Cancel message to the CBC. The *Message Identifier* value of the to-be-cancelled CMAS alert message is in the range 4370-to-4382. The *Referenced Message Number* (i.e., the *Message Number* associated with the CBEM message that has the to-be-cancelled CMAS alert message) is 100. The CMAS alert text of the cancelled message is in English (but no such indication is required in the CBEM_Cancel message).
4. The CBC sends a Kill message to the CMSP Infrastructure. The *Message Identifier* value of the to-be-cancelled CBS message is in the range 4370-to-4382. The *Old Serial Number* (i.e., the *Serial Number* associated with the to-be-cancelled CBS message) is 10.
5. The CMSP Infrastructure stops broadcasting the CBS message with the indicated *Message Identifier* value and the *Old Serial Number*. Thus, the broadcasting of CMAS alert message in English is cancelled.
6. The CMSP Gateway sends a CBEM_Cancel message to the CBC. The *Message Identifier* value of the to-be-cancelled CMAS alert message is in the range 4383-to-4395. The *Referenced Message Number* (i.e., the *Message Number* associated with the CBEM message that has the to-be-cancelled CMAS alert message) is 200. The CMAS alert text of the to-be-cancelled message is in Spanish (but no such indication is required in the CBEM_Cancel message).
7. The CBC sends a Kill message to the CMSP Infrastructure. The *Message Identifier* value of the to-be-cancelled CBS message is in the range 4383-to-4395. The *Old Serial Number* (i.e., the *Serial Number* associated with the to-be-cancelled CBS message) is 20.
8. The CMSP Infrastructure stops broadcasting the CBS message with the indicated *Message Identifier* value and the *Old Serial Number*. Thus, the broadcasting of CMAS alert message in Spanish is cancelled.

6.4.1 Cancellation CMAS Alert Broadcasts in English & Spanish Call Flow

This flow illustrates the cancellation of CMAS Alert broadcast in English and Spanish.

The values 100 and 200 for *Message Number* and the values 10 and 20 for *Serial Number* are just examples. A combination of *Message ID* and *Serial Number* uniquely identify a Cell Broadcast Service (CBS) message for a given area.

In the example, the *Message ID* {4370} and *Serial Number* 10 identify the CBS message that carries the English-language CMAS Alert. The *Message ID* {4383} and the *Serial Number* 20 identify the CBS message that carries the Spanish-language CMAS Alert.

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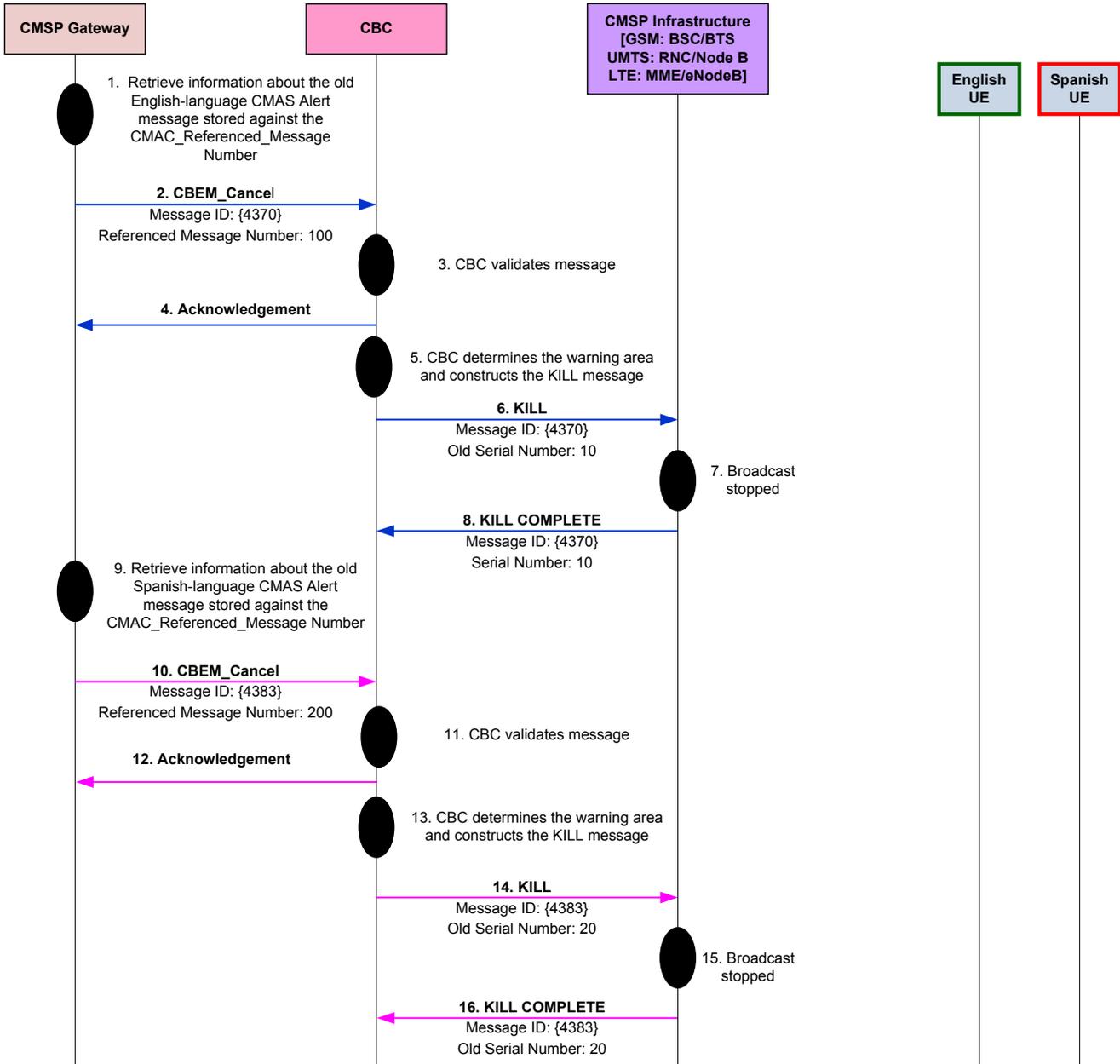


Figure 6.7 – Cancellation CMAS Alert Broadcasts in English and Spanish Call Flow

Descriptive Text for the Steps

1. The CMSP Gateway retrieves (from its internal mapping table) the *Message Identifier* value and the *Message Number* associated with the to-be-cancelled CMAS alert message in English using the *Referenced Message Number* value received in the CMAC message. The retrieved *Message Identifier* value (in the range 4370-to-4382) and *Message Number* (100) corresponds to a CMAS alert message that has the CMAS alert text in English.
2. The CMSP Gateway sends a CBEM_Cancel message to the CBC. The *Message Identifier* value of the to-be-cancelled CMAS alert message is in the range 4370-to-4382. The *Referenced Message Number* (i.e., the *Message Number* associated with the CBEM message that has the to-be-cancelled CMAS alert message) is 100. The CMAS alert text of the to-be-cancelled message is in English (but no such indication is required in the CBEM_Cancel message).
3. The CBC validates the CBEM_Cancel message.

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4. The CBC sends an acknowledgement to the CMSP Gateway to indicate the successful receipt of the CBEM_Cancel message.
5. The CBC determines the *Serial Number* of the to-be-cancelled CMAS alert message. The CBC determines the warning area to which the to-be-cancelled CMAS alert message is being broadcast. The CBC then constructs a KILL message.
6. The CBC sends the KILL message to the CMSP Infrastructure. The *Message Identifier* value of the to-be-cancelled CBS message is in the range 4370-to-4382. The *Old Serial Number* (i.e., the *Serial Number* associated with the to-be-cancelled CBS message) is 10.

Within the CMSP Infrastructure, the node that receives the KILL message varies based on the access technologies. For GSM, it is the BSC. For UMTS, it is the RNC. For E-UTRAN, it is the MME.

The actual name of the message (and the format) will vary based on the technology. For GSM/UMTS, the message name is KILL. For E-UTRAN, the message name is STOP WARNING REQUEST (between CBC and MME) and KILL REQUEST (between MME and eNodeB).

7. The CMSP Infrastructure stops broadcasting the CBS message with the indicated *Message Identifier* value and the *Old Serial Number*. Thus, the broadcasting of CMAS alert message in English is cancelled.
8. The CMSP Infrastructure node sends an acknowledgement to the CBC using the KILL COMPLETE message as a response. The actual name of the message will vary based on the node that is sending the response message. For GSM/UMTS, the BSC/RNC sends KILL COMPLETE message. For E-UTRAN, the MME sends STOP WARNING RESPONSE message (eNodeB sends KILL RESPONSE message to MME).
9. Since the CMAS alert message is also broadcast with Spanish-language CMAS alert text, the CMAC_Cancel request shall also cancel the broadcast of the Spanish-language CMAS alert text. The CMSP Gateway retrieves the *Message Identifier* value and the *Message Number* associated with the to-be-cancelled Spanish-language CMAS message using the *Referenced Message Number* value received in the CMAC message. The retrieved *Message Identifier* value (in the range 4383-to-4395) and *Message Number* (200) corresponds to the CMAS alert message that has the CMAS alert text in Spanish.
10. The CMSP Gateway sends a CBEM_Cancel message to the CBC. The *Message Identifier* value of the to-be-cancelled CMAS alert message is in the range 4383-to-4395. The *Referenced Message Number* (i.e., the *Message Number* associated with the CBEM message that has the to-be-cancelled CMAS alert message) is 200. The CMAS alert text of the to-be-cancelled message is in Spanish (but no such indication is required in the CBEM_Cancel message).
11. The CBC validates the CBEM_Cancel message.
12. The CBC sends an acknowledgement to the CMSP Gateway to indicate the successful receipt of the CBEM_Cancel message.
13. The CBC determines the *Serial Number* of the to-be-cancelled CMAS alert message. The CBC determines the warning area to which the to-be-cancelled CMAS alert message was being broadcast. The CBC then constructs a KILL message.
14. The CBC sends the KILL message to the CMSP Infrastructure. The *Message Identifier* value of the to-be-cancelled CBS message is in the range 4383-to-4395. The *Old Serial Number* (i.e., the *Serial Number* associated with the to-be-cancelled CBS message) is 20.

Within the CMSP infrastructure, the node that receives the KILL message varies based on the access technology. For GSM, it is the BSC. For UMTS, it is the RNC. For E-UTRAN, it is the MME.

The actual name of the message (and the format) will vary based on the technology. For GSM/UMTS, the message name is KILL. For E-UTRAN, the message name is STOP WARNING REQUEST (between CBC and MME) and KILL REQUEST (between MME and eNodeB).

15. The CMSP Infrastructure stops broadcasting the CBS message with the indicated *Message Identifier* value and the *Old Serial Number*. Thus, the broadcasting of the CMAS message in Spanish is cancelled.
16. The CMSP Infrastructure node sends an acknowledgement to the CBC using the KILL COMPLETE message as a response. The actual name of the message will vary based on the node that is sending the response message. For GSM/UMTS, the BSC/RNC sends a KILL COMPLETE message. For E-UTRAN,

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the MME sends a STOP WARNING RESPONSE message (eNodeB sends a KILL RESPONSE message to the MME).