

**Before the
Federal Communications Commission
Washington, D. C. 20554**

In the Matter of)
)
Review of the Emergency Alert System;) EB Docket No. 04-296
)
)
)
)

To The Commission:

**Reply Comments of Sage Alerting Systems, Inc.
In Response to Public Notice DA 13-1969
Public Safety and Homeland Security Bureau Seeks Comment
Regarding Equipment and Operational Issues Identified Following
the First Nationwide Test of the Emergency Alert System**

November 11, 2013

Sage Alerting Systems respectfully submits its reply comments in the above named proceeding.

1 Live Audio

In its comments, Trilithic¹ implies that Part 11 either expects, or permits, EAS devices to directly patch through the input to the output after the device forwards the EAS headers. Sage disagrees. Implementing the system in this manner would require a count down or call up period of indeterminate length before meaningful EAN audio information could begin. As shown in figure 1 below, this type of design would lead to part of the audience missing the first portion of the EAN, or would require everyone to listen to “please stand by” audio for a minute or more, or both. It may be that FEMA plans to do a “vamp until ready” at the start of a live alert, but they did not do so in the 2011 test. Sage believes that doing so at any time adds unnecessary delay to the dissemination of pre-event warning information.

¹ Comments of Trilithic Incorporated (10/24/2013), EB Docket No. 04-296 at 7.

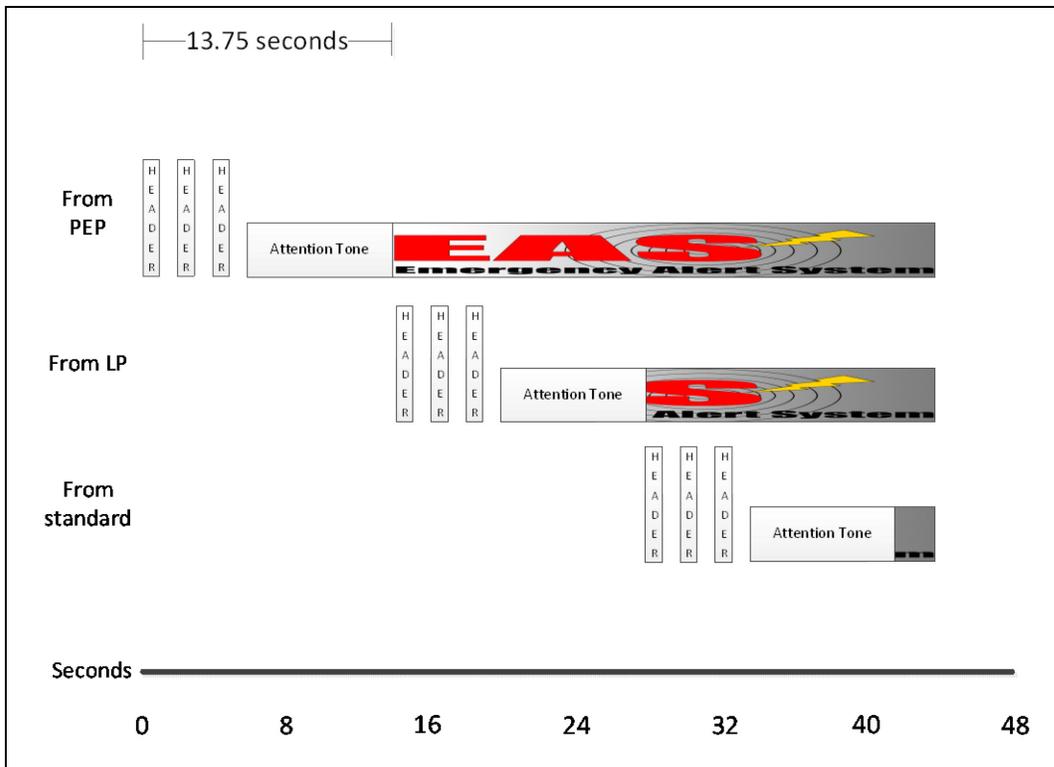


Figure 1. Results of switch to live audio in progress. Audio is lost. The header length is from an actual measurement of a relay of the 2011 EAN test.

A live switch implementation, with its loss of audio from the start of the message, is sensitive to any startup delays in upstream stations; a particular EAS participant can only start the process after it receives the headers, and that delay depends on how long it takes for the stations in the chain before it to get the alert on the air. Figure 1 shows only the delays that are caused by sending the EAS headers and attention tone. It does not take into account the various delays caused by satellite hops, compression delay (applies to digital radio as well as TV and cable), and synchronization in complex TV² and cable systems. This can add six seconds or longer per hop. Figure 1 also only applies to legacy over-the-air delivery of alerts. Delays can be even longer for CAP.

CAP is not currently used for EAN dissemination, and there is no current definition for the streaming audio protocols or servers in any of the three EAS/CAP documents

² Although not typical, some areas do use TV stations as monitor sources. Other EAS participants use remote receivers and streaming audio to deliver their assigned monitor sources to out-of-area insertion points. In some cases, an inexpensive streaming system is used that, while providing high quality audio, adds several additional seconds of delay.

necessary to allow device manufactures to build an interoperable CAP streaming EAN system. The three documents are CFR 47 Part 11, the IPAWS profile, and the ECIG Implementation Guide. A streaming EAN can't be delivered over CAP until the stream transport mechanism has been defined, vendors have developed the necessary software updates, and EAS participants have installed those updates.

There is no standard for the poll rate on CAP servers. Some EAS participants poll as quickly as once each 15 seconds, some as slowly as once each three minutes. The concept of "real-time audio" disappears when CAP is taken into account. The EAN system must permit variable, and potentially lengthy, delays when a hybrid legacy/CAP system is deployed. Although some have viewed the EAN system as a 1950's sci-fi movie, where "attention people of earth" comes out of every speaker in the country simultaneously, this isn't possible with current broadcast technology³.

Figure 1 shows the result of three relay hops. While this is the longest chain in many areas, large states might have an extra state relay hop between the PEP and LP stations. Dropouts in portions of the daisy chain might cause additional hops during an actual EAN. The longest delay would be at least ninety seconds when all delays are taken into account⁴.

Sage, since its original implementation in 1996, ensures that all of the received audio is forwarded to the user. Audio is stored in a first in, first out delay buffer, so that the audio received is played back after the relay device generates its own headers and attention signal. The audio buffer wraps around so that unlimited audio, delayed by the necessary amount, is available. The results of this style of implementation are shown in figure2 below.

³ Try watching a sporting event on TV while listening to the local commentators on radio.

⁴ Ninety seconds doesn't sound long, but count it out while holding your breath. That's what everyone will be doing if they hear the EAN tones followed by ninety seconds of "Please stand for the President of the United States".

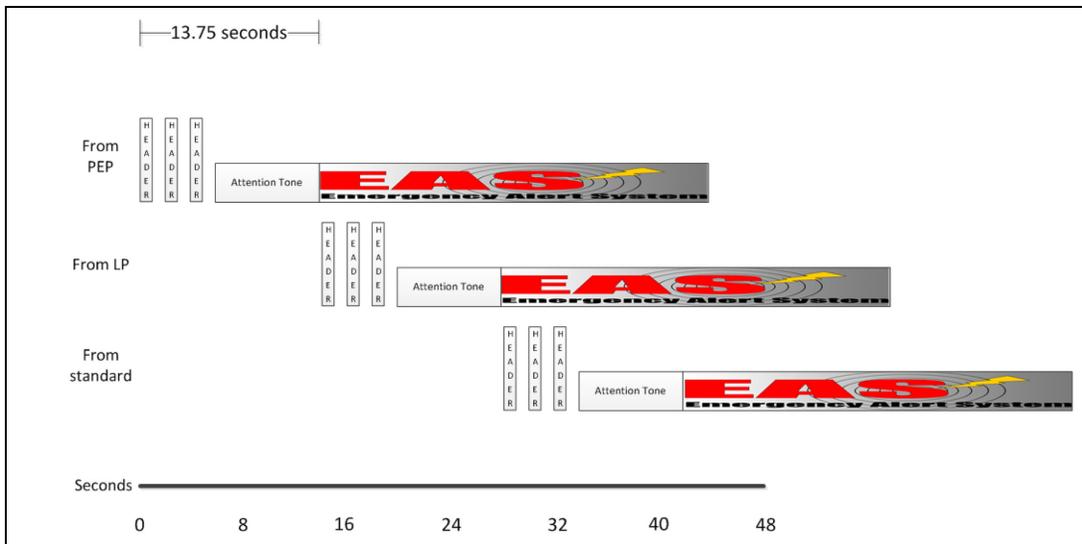


Figure 2. Using audio storage as a delay buffer, allowing all audio to be sent.

This implementation is not sensitive to delays in relay, as long as upstream stations in the daisy chain relay all the audio they received. While stations at the end of the chain are sending the data after stations at the start of the chain, each audience receives all of the data, and the originator of the audio doesn't need to wait ninety seconds before starting to speak.

Sage strongly recommends that the FCC clarify if it wants EANs to operate as shown in figure 1 (audio is lost, requiring a built in "please stand by" for 90 seconds or longer), or as in figure 2 (everyone hears all of the audio, although portions of the audience will hear it later than others). Sage recommends figure 2.

EAS participants that have a system that handles EANs where audio is lost must make that known in the state plan, and the state plan must not allow those systems to be used anywhere in the daisy chain but an end point.

2 National Periodic Test Event Code

Sage notes FEMA⁵ has requested that the NPT code be mandated to be relayed and forwarded as is the EAN. Sage agrees, though with the caveat that the NPT be limited to two minutes. Sage products, and perhaps other vendors as well, have the ability to set an

⁵ Comments of Federal Emergency Management Agency (11/4/2013), EB Docket No. 04-296 (at heading 3).

alert for “automatic relay”, which will send out the alert while it is still being received, so that the alert relays as in figure 2 above. This will allow the NPT is be used to test most of the features of an EAN, including the transport of the message through the same path as an EAN, without the problems of using the live EAN code. See Sage’s comments⁶ for additional details.

3 Visual Crawl and Audio Accessibility Issues

Sage agrees with the comments of Wireless RERC⁷ that difficulties with the text crawl exist with all types of EAS alerts, not just EAN. In most instances, the text presentation can be fine-tuned with weekly and monthly tests, EAS participants need not wait for an EAN. We reiterate our comments that FCC should allow for the technical limitations in text insertion equipment and not try to specify these elements too stringently, should it chose to add requirements in this area. Sage supports the comments given by the NAB, in particular the possibility of unintended consequences of delaying or reducing the amount of information transmitted.⁸

4 Use of Alternate National EAN distribution

Sage commends NPR and its engineering staff for their efforts in providing the EAN alerts on the NPR “Squawk Channel”. We are aware of many stations that used this channel, and who relied on the RWT tests that ran on that channel in the weeks leading to the November 9 test for level adjustments. We hope the FCC and FEMA will continue to encourage the use of this, or a similar system, as a permanent part of the EAN distribution network. Several members of the radio engineering community were against the use of the squawk channel, with the argument that its use would mask other problems in the chain. We agree that special patches aren’t useful unless they become a permanent part of the solution. As for masking problems, Sage believes that coverage problems were already well known, and coverage holes caused by the lack of accessible PEPs in the area, unusable monitor assignments, stations off the air, etc., were and are easily identified by RWT and RMT testing. We don’t need to wait for an EAN to prove the

⁶ Comments of Sage Alerting Systems, (11/4/2013), EB Docket No. 04-296 at 10.

⁷ Comments Of Rehabilitation Engineering Research Center For Wireless Technologies (Wireless RERC) (October 23, 2013) at 6

⁸ Comments of the National Association of Broadcasters (11/4/2013) at 7.

point. Hopefully, any such temporary patches have been identified at the local and state level, and steps were taken to make a permanent fix. The FCC can't fix these local problems.

5 Broadcast EAN Immediately upon receipt

Sage agrees with the comments of DIRECT TV⁹ that the EAN should be broadcast immediately upon receipt. They also comment regarding the national location code¹⁰, that the use of the Washington DC code worked well for DIRECT TV, and that keeping this scheme is better than switching to a national code. Sage mentioned in its comments¹¹ that staying with the DC code may have a smaller total system cost than a nation code. Testing at FEMA's JITC lab will help provide data in this area.

6 Use of CSRIC to Develop Technical Recommendations

An FCC advisory committee, the Communications Systems Security Reliability and Interoperability Council currently has a sub group tasked with making comments on the EAN test.¹² Sage agrees with the Broadcast Warning Working Group's comments¹³ and the comments of the NAB¹⁴ that CSRIC is working to provide the answers the FCC needs. Sage further suggests the answers to these questions, specifically the cost to individual participants as well as the total cost to the system, and specific technical solutions to interoperability problems, require input from all types of EAS participants and manufacturers, Radio, TV, Cable, and satellite. The CSRIC EAN subcommittee should continue to expand as needed to recruit additional expertise.

⁹ Comments of DIRECTV, LLC (11/04/2013) at 2.

¹⁰ Ibid.

¹¹ Comments of Sage Alerting Systems, (11/4/2013), EB Docket No. 04-296 at 9.

¹² Harold Price of Sage is on this subcommittee.

¹³ Comments of the Broadcast Warning Working Group (11/4/2013) at 3.

¹⁴ Comments of the National Association of Broadcasters (11/4/2013) at 5.

Respectfully submitted:

/s/

Gerald LeBow
Harold Price
Co-Founders

Sage Alerting Systems, Inc.
800 Westchester Avenue, Suite 641 North
Rye Brook, NY 10573
914-872-4069

November 11, 2013