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Special Interest Group

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Agenda

- COG-to-COG Messaging
- The IPAWS Demo Environment
- Understanding Error Responses from IPAWS
- Q&A

COG-to-COG Messaging (Why)

- COG may not have Public Alerting Authority for the message you wish to put out. The Target COG may have that authority.
  - Military base to surrounding county or state authority.
  - Subordinate authority to senior authority for review.
- Private messaging - The message may be something that is not intended for the general public – but may be of interest to a neighboring or component jurisdiction.
  - Notification that might otherwise alarm the public before any alarm is actually warranted – but your neighboring jurisdiction may need to be prepared
  - Status alerts (but not full fledged Situation Reports) during emergency ops or exercises
- Directed addressing of a Public alert to ensure it goes to a particular information exchange partner.

COG-to-COG Messaging (Interoperability)

- There are multiple different products with the ability to exchange alerts through IPAWS-OPEN interfaces.
- Neighboring Jurisdictions my have different products from that of your customer.
  - Your customers can exchange alerts with neighbors without your product having to build a custom connection to the neighboring jurisdiction's product.
  - Reduces custom coded inter-system dependencies
- Your customer may have more than one product.
  - E.g., E-TEAM for Emergency Management, but the iPAD app for quick alerting in mobile setting.
  - Instead of COG-to-COG, this allows inter-COG interoperability for alerts. All without inter-system maintenance dependency.

COG-to-COG Messaging (How)

- Posting:
  - Put the intended recipient COG ID in the “addresses” block of the CAP message (e.g. <addresses> 120001 120059</addresses>
  - For Private messaging use “scope” == Private (e.g., <scope>Private</scope>)
  - For a Public message not intended for IPAWS Distribution in any way use “scope” == Public but remove the <code>IPAWSv1.0</code> element.
- Retrieving via SOAP interface:
  - getMessage retrieves all messages with the Calling COG’s ID in addresses.
  - getMessageList provides metadata for all messages with the calling COG’s ID in addresses.
  - Additional parameters (see Interface Guide) can be used to narrow the response.

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Three IPAWS Environments

- PROD
  - Live public alerts!
  - EMAs only
- TDL
  - Developmental test site
  - Software developers only
- JITC
  - Train, Drill, Exercise, Demo
  - EMAs and software developers

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Capabilities at JITC

- IPAWS-OPEN v3.0
  - Full control of COG permissions
  - CMSP gateway, and toy cell (soon)
  - EAS Atom Feed and EAS polling devices
  - Public Alert Feed
- Users need your help to train, drill, exercise
  - Install and manage certs
  - Point to JITC endpoint

Capabilities at JITC

- Staffed to support operational users, testing, demonstration

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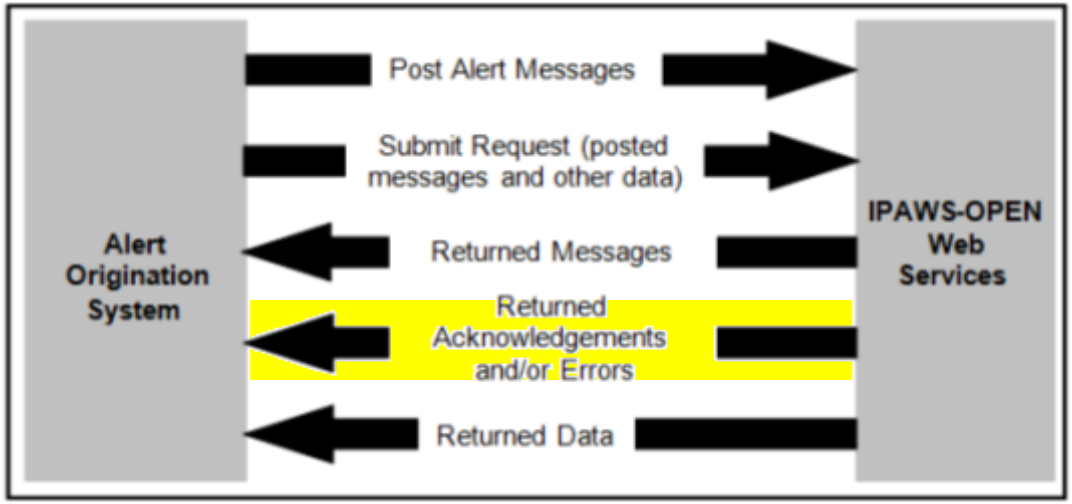
Response Codes

- Acks and Errors
  - Feedback on where your messages went and why
  - Not necessarily “errors” in many cases
  - Message can Ack for EAS, but Error for CMAS



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Response Codes – Statistics

79	• Developer COGs enabled in TDL
18	• Developer COGs posted messages to TDL since Jan 1
1526	• Messages posted since Jan 1 (24% posted by COG 120030)

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Response Codes – Statistics

8	• Developer COGs received at least 1 NWEM Ack
11	• Developer COGs received at least 1 EAS Ack
12	• Developer COGs received at least 1 CMAS Ack
6	• Developer COGs received at least 1 PUBLIC Ack

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Response Codes – Statistics

32%	• 308 errors (signature-not-valid)
3%	• 701 errors (invalid-value-in-element-eventcode)
3%	• 442 errors (required-element-missing-source)
3%	• 301 errors (non-IPAWS-alert)
3%	• 305 errors (invalid-value-in-element-geocode)

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Error Responses (Types of Response)

- HTTP 5xx responses
- Exceptions
- IPAWS Numbered Responses (found in returned XML):
  - Acknowledgements
    - Overall and by Distribution Channel
    - Positive (acceptance by channel) and negative (not sent to a channel)
  - Errors
    - Content (yours to deal with)
    - Permissions (either yours to deal with or a need to update permissions by IPAWS Admin Staff
    - System errors (an acknowledgement to you that there was some sort of error internal IPAWS error.)

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Error Responses (HTTP 5xx)

- **500 Internal Server Error -** A generic error message, given when no more specific message is suitable.
- **501 Not Implemented -** The server either does not recognize the request method, or it lacks the ability to fulfill the request.
- **502 Bad Gateway -** The server was acting as a gateway or proxy and received an invalid response from the upstream server.
- **503 Service Unavailable -** The server is currently unavailable (because it is overloaded or down for maintenance). Generally, this is a temporary state.
- **504 Gateway Timeout -** The server was acting as a gateway or proxy and did not receive a timely response from the upstream server.

If it worked before, Please HTTP Retry!

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Error Responses (Exception Response)


```
 <ns4:postCAPResponseTypeDef
xmlns="urn:oasis:names:tc:emergency:cap:1.2"
xmlns:ns2=http://gov.fema.ipaws.services/caprequest
xmlns:ns3="http://gov.fema.ipaws.services/capresponse"
xmlns:ns4="http://gov.fema.ipaws.services/IPAWS_CAPSer
vice/">
        <ns3:parameterListItem>

<ns3:parameterName>ERROR</ns3:parameterName>
          <ns3:parameterValue>Y</ns3:parameterValue>
          <ns3:subParaListItem>
            <ns3:subParameterName>ERROR
Message</ns3:subParameterName>
            <ns3:subParameterValue>POST_CAP12 POST
FAILED - Message schema is invalid.
Error Code: OP01</ns3:subParameterValue>
          </ns3:subParaListItem>
        </ns3:parameterListItem>
</ns4:postCAPResponseTypeDef>
```


The most common IPAWS returned exception is a Schema Validation. Message cannot get to internal routines without validation. Other exceptions (e.g., Failed Authentication) are similarly structured.

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Error Responses (IPAWS Numbered - Structure)

- A string of XML meeting the *postCapResponseTypeDef* schema from the IPAWS WSDL
- A *parameterListItem* with that identifies the message for reference
- A *parameterListItem* that is a container of *subParameterListItems*
- There are 4 *subParameterListItem* entries for each response code provided.


```
<ns4:postCAPResponseTypeDef xmlns="urn:oasis:names:tc:emergency:cap:1.2”.
xmlns:ns2="http://gov.fema.ipaws.services/caprequest"
xmlns:ns3="http://gov.fema.ipaws.services/capresponse"
xmlns:ns4="http://gov.fema.ipaws.services/IPAWS_CAPService/">
    <ns3:parameterListItem>
      <ns3:parameterName>identifier</ns3:parameterName>
      <ns3:parameterValue>Test1_2012_01_04_2</ns3:parameterValue>
    </ns3:parameterListItem>
    <ns3:parameterListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>CHANNELNAME</ns3:subParameterName>
        <ns3:subParameterValue>CAPEXCH</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUSITEMID</ns3:subParameterName>
        <ns3:subParameterValue>200</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>ERROR</ns3:subParameterName>
        <ns3:subParameterValue>N</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUS</ns3:subParameterName>
        <ns3:subParameterValue>Ack</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>CHANNELNAME</ns3:subParameterName>
        <ns3:subParameterValue>IPAWS</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUSITEMID</ns3:subParameterName>
        <ns3:subParameterValue>308</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>ERROR</ns3:subParameterName>
        <ns3:subParameterValue>Y</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUS</ns3:subParameterName>
        <ns3:subParameterValue>signature-not-valid</ns3:subParameterValue>
      </ns3:subParaListItem>
    </ns3:parameterListItem>
  </ns4:postCAPResponseTypeDef>
```


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Error Responses (IPAWS Numbered – Message Reference)


```
<ns4:postCAPResponseTypeDef xmlns="urn:oasis:names:tc:emergency:cap:1.2”.
xmlns:ns2="http://gov.fema.ipaws.services/caprequest"
xmlns:ns3="http://gov.fema.ipaws.services/capresponse"
xmlns:ns4="http://gov.fema.ipaws.services/IPAWS_CAPService/">
    <ns3:parameterListItem>
      <ns3:parameterName>identifier</ns3:parameterName>
      <ns3:parameterValue>Test1_2012_01_04_2</ns3:parameterValue>
    </ns3:parameterListItem>
    <ns3:parameterListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>CHANNELNAME</ns3:subParameterName>
        <ns3:subParameterValue>CAPEXCH</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUSITEMID</ns3:subParameterName>
        <ns3:subParameterValue>200</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>ERROR</ns3:subParameterName>
        <ns3:subParameterValue>N</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUS</ns3:subParameterName>
```



```
<ns3:parameterListItem>
    <ns3:parameterName>identifier</ns3:parameterName>
    <ns3:parameterValue>Test1_2012_01_04_2</ns3:parameterValue>
</ns3:parameterListItem>
```



```
        <ns3:subParameterName>ERROR</ns3:subParameterName>
        <ns3:subParameterValue>Y</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUS</ns3:subParameterName>
        <ns3:subParameterValue>signature-not-valid</ns3:subParameterValue>
      </ns3:subParaListItem>
    </ns3:parameterListItem>
  </ns4:postCAPResponseTypeDef>
```


- **The XML in green on the left is expanded to readable size in the box below.**
- **The *parameterValue* tag holds the message identifier for the message that was posted.**

Error Responses (IPAWS Numbered – Multiple Response Structure)


```
<ns4:postCAPResponseTypeDef xmlns="urn:oasis:names:tc:emergency:cap:1.2”.
xmlns:ns2="http://gov.fema.ipaws.services/caprequest"
xmlns:ns3="http://gov.fema.ipaws.services/capresponse"
xmlns:ns4="http://gov.fema.ipaws.services/IPAWS_CAPService/">
    <ns3:parameterListItem>
      <ns3:parameterName>identifier</ns3:parameterName>
      <ns3:parameterValue>Test1_2012_01_04_2</ns3:parameterValue>
    </ns3:parameterListItem>
    <ns3:parameterListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>CHANNELNAME</ns3:subParameterName>
        <ns3:subParameterValue>CAPEXCH</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUSITEMID</ns3:subParameterName>
        <ns3:subParameterValue>200</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>ERROR</ns3:subParameterName>
        <ns3:subParameterValue>N</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUS</ns3:subParameterName>
        <ns3:subParameterValue>Ack</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>CHANNELNAME</ns3:subParameterName>
        <ns3:subParameterValue>IPAWS</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUSITEMID</ns3:subParameterName>
        <ns3:subParameterValue>308</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>ERROR</ns3:subParameterName>
        <ns3:subParameterValue>Y</ns3:subParameterValue>
      </ns3:subParaListItem>
      <ns3:subParaListItem>
        <ns3:subParameterName>STATUS</ns3:subParameterName>
        <ns3:subParameterValue>signature-not-valid</ns3:subParameterValue>
      </ns3:subParaListItem>
    </ns3:parameterListItem>
  </ns4:postCAPResponseTypeDef>
```


- **The second *parameterListItem* tag (in Red) contains one or more groupings of four *subParameterListItem* entries.**
- **The first of these groups is colored in green. We will examine it in more detail on the next slide.**

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Error Responses (IPAWS Numbered – Individual Response Structure Example)


```
<ns3:subParaListItem>
  <ns3:subParameterName>CHANNELNAME</ns3:subParameterName>
  <ns3:subParameterValue>CAPEXCH</ns3:subParameterValue>
</ns3:subParaListItem>
<ns3:subParaListItem>
   <ns3:subParameterName>STATUSITEMID</ns3:subParameterName>
   <ns3:subParameterValue>200</ns3:subParameterValue>
</ns3:subParaListItem>
<ns3:subParaListItem>
    <ns3:subParameterName>ERROR</ns3:subParameterNa
    <ns3:subParameterValue>N</ns3:subParameterValue>
</ns3:subParaListItem>
<ns3:subParaListItem>
      <ns3:subParameterName>STATUS</ns3:subParameterl
      <ns3:subParameterValue>Ack</ns3:subParameterValue>
</ns3:subParaListItem>
```


Four entries per response:

- **CHANNELNAME**
- **STATUSITEMID**
- **ERROR**
- **STATUS**

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IPAWS Numbered Responses (CAP Exchange)

- CHANNELNAME==CAPEXCH
- STATUSITEMID==200
  - Successful post to IPAWS for retrieval by any COG using a COG ID identified in addresses
  - Also a prerequisite for actually storing your message in IPAWS and for processing the message for additional dissemination.
  - Will generally also include ERROR==N and STATUS==Ack
- STATUSITEMID==2xx
  - An error condition related to the structure of the basic CAP message. The message will not be usable by IPAWS for any purpose. Usually generated by a message that basses the formal schema, but fails to meet the wording in the CAP Standard.
  - Accompanied by ERROR==Y and STATUS=="a-short-desc-of-fail"

IPAWS Numbered Responses (IPAWS Profile)

- CHANNELNAME==IPAWS
- STATUSITEMID==300
  - Identifies that a message meets the IPAWS Profile and also is signed with an valid Digital Signature.
  - A prerequisite for making and for processing the message for additional dissemination channels beyond CAP Exchange.
  - Will generally also include ERROR==N and STATUS==Ack
- STATUSITEMID==3xx
  - An error condition related to validation IAW the Basic IPAWS Profile. with COG level authorizations, or with digital signature validation.
  - Accompanied by ERROR==Y and STATUS==“a-short-desc-of-fail”
- STATUSITEMID==308 STATUS==signature-not-valid

IPAWS Numbered Responses (NWEM)

- CHANNELNAME==NWEM
- STATUSITEMID==400
  - Identifies that a message meets the requirements for transmission to NOAA Radio.
  - Generally also includes ERROR==N and STATUS==Ack
- STATUSITEMID==401
  - A notification that the message was NOT sent to NOAA.
  - Due to error, or due to BLOCKCHANNEL.
  - Accompanied by ERROR==N and STATUS==message-not-disseminated-as-nwem
- STATUSITEMID==4xx
  - An error condition related to COG authorization or NWEM content requirements.
  - Accompanied by ERROR==Y and STATUS==“a-short-desc-of-fail”

IPAWS Numbered Responses (EAS)

- CHANNELNAME==EAS
- STATUSITEMID==500
  - Identifies that a message meets the requirements for transmission via EAS and has been pit on the IPAWS EAS feed.
  - Generally also includes ERROR==N and STATUS==Ack
- STATUSITEMID==501
  - A notification that the message was NOT sent to EAS.
  - Due to error, or due to BLOCKCHANNEL.
  - Accompanied by ERROR==N and STATUS==message-not-disseminated-as-EAS
- STATUSITEMID==5xx
  - An error condition related to COG authorization or EAS content requirements.
  - Accompanied by ERROR==Y and STATUS==“a-short-desc-of-fail”

BLOCKCHANNEL. or any 501, will cause consideration for PUBLIC Feed.

Do Not Confuse with HTTP 5xx responses.

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IPAWS Numbered Responses (CMAS)

- CHANNELNAME==CMAS
- STATUSITEMID==600
  - Identifies that a message meets the requirements for transmission to cellular carriers via CMAS.
  - Generally also includes ERROR==N and STATUS==Ack
- STATUSITEMID==601
  - A notification that the message was NOT sent to EAS.
  - Due to error, or due to BLOCKCHANNEL.
  - Accompanied by ERROR==N and STATUS==message-not-disseminated-as-CMAS
- STATUSITEMID==6xx
  - An error condition related to COG authorization or CMAS content requirements.
  - Accompanied by ERROR==Y and STATUS==“a-short-desc-of-fail”

IPAWS Numbered Responses (CMSP Gateways)

- CHANNELNAME==Gateway Name
- STATUSITEMID==10
  - Identifies that a CMAS message has been acknowledged by a particular carrier gateway.
  - Do to delays by some gateways this response my not be in the original post message response, but may require a subsequent “getMessageStatus” call.
  - Generally also includes ERROR==N and STATUS==Ack

IPAWS Numbered Responses (Multiple Channels)

- CHANNELNAME==EAS, CMAS, NWEM or PUBLIC
- STATUSITEMID==7xx
  - An error condition related to COG authorization or content requirements that applies to two or more downstream distribution channels
  - Accompanied by ERROR==Y and STATUS==“a-short-desc-of-fail”

IPAWS Numbered Responses (PUBLIC)

BLOCKCHANNEL. of EAS, or any EAS error, will cause consideration for PUBLIC Feed.

- CHANNELNAME==PUBLIC
- STATUSITEMID==800
  - Identifies that a message meets the IPAWS Profile and was properly signed, but was not sent by EAS (for any reason), and was not blocked for The IPAWS Public Message feed.
  - Generally also includes ERROR==N and STATUS==Ack
- STATUSITEMID==801
  - A notification that the message was NOT sent to the Public Feed.
  - Due to error, or due to BLOCKCHANNEL.
  - Accompanied by ERROR==N and STATUS==message-not-disseminated-as-EAS
- STATUSITEMID==8xx
  - An error condition related to COG authorization or IPAWS Public Feed content requirements.
  - Accompanied by ERROR==Y and STATUS=="a-short-desc-of-fail"

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IPAWS Numbered Responses (x12 Errors)

- CHANNELNAME==“Any of the previous”
- STATUSITEMID==412 or 512 or 612 or 712 or 812
  - Identifies that a message was built correctly and met all authorization but experienced a problem internal to IPAWS.
  - Generally also includes ERROR==Y and STATUS==system-error-has-occurred-“channel description”-service
- Such errors are IPAWS internal errors. They are not caused by any external origination system issue. The message was received and processed properly in the database, but:
  - Had problems being sent to the appropriate dissemination service, or
  - Had problems in building the appropriate response for you concerning the success or failure of the message.
- Please report any x12 errors to ipaws@fema.gov.

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Comments and Questions

- IPAWS Website - http://www.fema.gov/emergency/ipaws

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