Interface Specification

OFML

Datamaxx Omni*xx*™ Force Markup Language (OFML 2015)

Version 1.0

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Version	Date	Notes
Version 1.0	03/04/2015	Initial Release

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1.0 OVERVIEW

The Datamaxx Omni*xx* Force™ Markup Language™ (OFML™) is an extension of the eXtensible Markup Language (XML) for law enforcement interfaces. XML was developed by the World Wide Web Consortium (W3C) and is quickly becoming the standard for the exchange of information between applications. OFML defines an XML-based method for exchanging law enforcement information. It does not specify the format of the law enforcement information itself, only the structure for its exchange. To use an analogy, OFML defines the envelope, not the contents of the letter it delivers. The format of the law enforcement information itself will be a function of the agency's requirements and vary greatly among agencies.

Features of OFML include:

1) OFML structured messages are well-formed XML documents that focus on data and leave formatting to the applications. As XML documents, messages will be able to be formatted for display using standard XML techniques such as XSL style sheets and document processors.

2) OFML accommodates the unstructured nature most current law enforcement messages, especially responses, while providing the framework that will be necessary when law enforcement messages become more structured using XML data structures. This information can readily be formatted into OFML.

3) OFML creates a message that is consistent with terminology used by systems that access Law Enforcement and Criminal Justice systems, such as the National Crime Information Center (NCIC), National Law Enforcement Telecommunications Network (NLETS) or other data sources (such as Motor Vehicle Departments) without more than a cursory understanding of XML.

This document defines the standard OFML interface for use between client systems, ranging from Datamaxx Omni*xx* desktop clients to remote computer systems.

This document presents version 1.0 of OFML 2015. Existing system that use previous versions of OFML will still operate transparently, as OFML 2015 retains all previous data structure specifications.

OFML 2015 adds the following features over and above the previous versions.

- Header Element – DFM. Allows the specification of a data format so that data can be transmitted as a text node, XML node or both for use at a client end point.

- Response Element – IMAGES. Allows for multiple images to be transmitted using Base64 encoding.

- Response Element – ATTACHMENTS. For future use. Allows for attachments to be included with a message, over and above images.

2.0 GENERAL REQUIREMENTS

OFML messages consist of "well-formed" XML documents structured as defined in subsequent sections of this document. This is a very basic implementation of XML designed to meet the requirements of message switch interfaces. Each message contains a root (OFML) node, header element, and either a transaction (TRN) or response (RSP) element. Specific attributes depend on the type of message and are defined in the remainder of this document.

```
<OFML>
  <HDR>
    <ID>(Contents)</ID>
    <DAC>(Contents)</DAC>
    <DAT>(Contents)</DAT>
    <REF>(Contents)</REF>
    <MKE>(Contents)</MKE>
    <HID?>(Contents)</HID>
    <ENT?>(Contents)</ENT>
    <RQR?>(Contents)</RQR>
    <USR?>(Contents)</USR>
    <PWD?>(Contents)</PWD>
    <COD?>(Contents)</COD>
    <ORI?>(Contents)</ORI>
    <SRC?>(Contents)</SRC>
    <DST*>(Contents)</DST>
    <CTL?>(Contents)</CTL>
    <SUM?>(Contents)</SUM>
    <PRI?>(Contents)</PRI>
    <CAT?>(Contents)</CAT>
    <HIT?>(Contents)</HIT>
    <DFM?>(Contents)</DFM>
  </HDR>
  <TRN|RSP>
    <MFC*>(Contents)</MFC>
  </TRN|RSP>
</OFML>
```

The following requirements apply to all OFML messages:

1) White space and line breaks between elements are meaningless and must not be used to convey relevant information. White space is used in the message definitions and examples in this document for the sake of clarity only. Messages exchanged using OFML should not contain unnecessary white space.

2) Comments may be included anywhere between elements and should be ignored during processing.

3) “CDATA sections”, used to include data containing XML delimiters within an element’s contents, may be included within TRN and RSP MFC elements only.

4) Optional attributes should only be included if necessary.

5) All messages must fit within the maximum message size for the interface and must not be arbitrarily truncated. Doing so would likely render the messages non-well-formed XML.

3.0 MESSAGE FORMATS

The following section provides the OFML elements for both the header ("HDR") which contains control information about a message) and the actual data body of the message.

Note that the usage of the HDR elements will depend on the system that is being accessed.

3.1 TRANSACTIONS

Client-initiated transactions are structured as follows:

ELEMENT/ATTRIBUTE	SPECIFICATION
OFML	OFML element
OFML.VER	Version (optional) Defaults to "3"
OFML.HDR	Header element
OFML.HDR.ID	Message identifier (optional) Up to 10 alphanumeric characters used to identify a message
OFML.HDR.DAC	Device address code (optional) Used when the source of a message cannot be determined directly from the communications interface
OFML.HDR.HID	Device Host Identification (optional). A secondary identifier for a device that is required by some host systems, over and above the device address code.
OFML.HDR.DAT	Date/time message generated Format: YYYYMMDDHHMMSS
OFML.HDR.REF	Transaction reference number (optional) Defaults to HDR.ID Up to 10 alphanumeric characters Used to associate transactions and responses. Responses will include the reference number of the associated transaction
OFML.HDR.MKE	Message key or function code Per specific transaction
OFML.HDR.ENT	Entering agency (optional) Only used when entering agency is included in each transaction.
OFML.HDR.RQR	Requestor (optional) Only used when requestor is included in each transaction.
OFML.HDR.USR	User ID (optional) Only used when user ID is included in each transaction. Standard logon transactions will include the user ID as an MFC element.

ELEMENT/ATTRIBUTE	SPECIFICATION
OFML.HDR.PWD	User ID (optional) Only used when user ID and password is included in each transaction. Standard logon transactions will include the password as an MFC element.
OFML.HDR.COD	User Code (optional) Only used when the host system requires a unique identifier for an individual user on each transaction. This is distinct from the OFML.HDR.USR element as noted above.
OFML.HDR.ORI	Source ORI (optional)
OFML.HDR.DST	One or more destination elements (optional) ORI, state code, device mnemonic or broadcast code
OFML.HDR.CTL	NLETS control field (optional) Does not include asterisk. Note that in some instances this element will be in the body of the message (the “TRN” node, note the HDR node,
OFML.HDR.DFM	Response data format (optional). Defines the packaging of the responses from a data source to allow for text only responses, XML formatted responses or both to be transmitted.
OFML.HDR.SUM	Transaction summary (optional). Responses will include this attribute. This field is limited to 50 alphanumeric characters
OFML.TRN	Transaction element
OFML.TRN (MFC elements)	MFC elements per agency's requirements MFCs are used as element tags and data included as node data See additional requirements below.

Note that the usage of the TRN elements will depend on the system that is being accessed. The documentation for that system must be consulted in order to provide the correct XML data elements.

Additional requirements for MFC elements:

1) MFC elements will be arranged much like the current NCIC and NLETS standard for formatted messages with the following exceptions:

    a) The data will be tagged as XML elements. For example, the current NCIC/NLETS standard would represent the LIC MFC and data as: LIC/ABC123, while in the XML format this would be: <LIC>ABC123</LIC>.

b) The data will always be tagged with identifiers. Unlike an NCIC entry transaction where the fields are present without the MFC/ code to identify them, in XML formatted messages the element tag will always be the MFC code.

c) Blank MFCs, even on entry transactions need not be present. Since all MFCs are tagged, there is no need to include any MFC that does not contain data.

d) MFC order is irrelevant, with the proviso that some host systems may require the order to be maintained for functions such as NCIC modifies. This not a constraint of OFML.

e) Any element, including non-MFC elements, can include an optional error identifier (EID) attribute, which will be used for identifying errors. Where included, it indicates the value to be used in the ERR response to identify the field in error when it is not the same as the tag.

2) Images may be included as DSEO objects in either binary or Base64 format.

4.0 DATA RESPONSES

Data responses to client-initiated transaction are structured as follows:

ELEMENT/ATTRIBUTE	SPECIFICATION
OFML	Same as client-initiated transactions
OFML.VER	Same as client-initiated transactions
OFML.HDR	Same as client-initiated transactions
OFML.HDR.ID	Same as client-initiated transactions
OFML.HDR.DAC	Device address code (optional) Used when the recipient of the message is not the final destination
OFML.HDR.SRC	Set to mnemonic associated with source of response (e.g., “NCIC”, “NLETS”, “DMV”, “CCH”).
OFML.HDR.HID	Device Host Identification (optional). A secondary identifier for a device that is required by some host systems, over and above the device address code.
OFML.HDR.DAT	Same as client-initiated transactions
OFML.HDR.REF	Reference identifier from transaction Set to OFML.HDR.REF (default to OFML.HDR.ID) from transaction Use "UNKNOWN" for responses for which the reference related to the transaction is unknown or doesn’t exist
OFML.HDR.MKE	Message key or function code. (optional) Per specific transaction
OFML.HDR.ORI	Source ORI (optional)
OFML.HDR.DST	Destination ORI (optional)
OFML.HDR.CTL	NLETS control field from transaction (optional) Set to OFML.HDR.CTL from transaction Doesn’t include asterisk
OFML.HDR.SUM	Response summary (optional) Set to OFML.HDR.SUM from the transaction or other summary information
OFML.HDR.CAT	Response Category (optional). Used to assign a category (such as “CJIS”, indicating CJIS type data) to a response.
OFML.HDR.HIT	Hit Indicator (optional). Used to indicate that this message has a “HIT’ so it can be processed as such by an application.
OFML.HDR.PRI	Response Priority (optional). Used to allow an application to process messages within a priority set

ELEMENT/ATTRIBUTE	SPECIFICATION
OFML.RSP	Response element
OFML.RSP. (MFC elements)	MFC elements per agency's requirements MFCs are used as element tags and data included as node data See additional requirements below.

Additional requirements for MFC elements:

1) For unstructured responses, the text should be included as an MFC in an XML element with the "TXT" tag.

2) For unstructured responses, there may be tags other than “TXT” within the RSP element. These tags can be used to denote other formats applicable to the response textual data. These may be controlled by the setting of the “DFM” element in the HDR node in the request for the data.

3) Response can contain multiple records within the RSP element, each with its own MFC elements. Such elements can have any tag but must contain a TYP="R" (record) attribute.

4) Images may be included as DSEO objects in a binary format, or as an IMAGES Node within the RSP node. The following is the format of the IMAGES node:

```
<IMAGES>
<IMAGE_COUNT>n</IMAGE_COUNT>
<IMAGE> …. </IMAGE>
<IMAGE> …. </IMAGE>
</IMAGES>
```

   The data contained in the actual “IMAGE” node will be the Datamaxx Standard Embedded Object (DSEO) in XML Base64 format.

5) (Future). Attachments be included as follows:

```
<ATTACHMENTS>
<ATTACHMENT_COUNT>n</ATTACHMENT>
<ATTACHMENT> …. </ATTACHMENTE>
< ATTACHMENT > …. </ ATTACHMENT >
</ATTACHMENT S>
```

   The format within each attachment will be a function of the individual system (unlike images which use a specified XML format) and must be well formed XML

4.1 ACKNOWLEDGEMENT RESPONSES

Acknowledgements to client-initiated transaction are structured as follows:

ELEMENT/ATTRIBUTE	SPECIFICATION
OFML	Same as client-initiated transactions
OFML.VER	Same as client-initiated transactions
OFML.HDR	Same as client-initiated transactions
OFML.HDR.ID	Same as client-initiated transactions
OFML.HDR.DAC	Device address code (optional) Used when the recipient of the message is not the final destination
OFML.HDR.HID	Device Host Identification (optional). A secondary identifier for a device that is required by some host systems, over and above the device address code.
OFML.HDR.SRC	Set to "SWITCH" or other literal, depending on the system
OFML.HDR.DAT	Same as client-initiated transactions
OFML.HDR.REF	Set to OFML.HDR.REF (default to OFML.HDR.ID) from transaction Use "UNKNOWN" for responses for which OFML.HDR.ID from the transaction is unknown
OFML.HDR.MKE	Set to "ACK"
OFML.HDR.SUM	Response summary (optional) Set to OFML.HDR.SUM from the transaction or other summary information
OFML.RSP	Response element
OFML.RSP.TXT	Acknowledgement text element (optional) <TXT>*data*</TXT>

4.2 ERROR RESPONSES

Error responses are structured as follows:

ELEMENT/ATTRIBUTE	SPECIFICATION
OFML	Same as client-initiated transactions
OFML.VER	Same as client-initiated transactions
OFML.HDR	Same as client-initiated transactions
OFML.HDR.ID	Same as client-initiated transactions
OFML.HDR.DAC	Device address code (optional) Used when the recipient of the message is not the final destination
OFML.HDR.HID	Device Host Identification (optional). A secondary identifier for a device that is required by some host systems, over and above the device address code.
OFML.HDR.SRC	Set to "SWITCH" or other literal, depending on the system
OFML.HDR.DAT	Same as client-initiated transactions
OFML.HDR.REF	Set to OFML.HDR.REF (default to OFML.HDR.ID) from transaction Use "UNKNOWN" for responses for which OFML.HDR.ID from the transaction is unknown
OFML.HDR.MKE	Set to "ERR"
OFML.HDR.SUM	Response summary (optional) Set to OFML.HDR.SUM from the transaction or other summary information
OFML.RSP	Response element
OFML.RSP.COD	Error code element (optional) <COD>*data*</COD>
OFML.RSP.FLD	Field identifier element (optional) Tag of element containing the error, unless that element has an EID attribute, in which case that value will be used instead. <FLD>*data*</FLD> Do not include for errors unrelated to a single field,
OFML.RSP.TXT	Free text description of error (optional) <TXT>*data*</TXT>

5.0 EXAMPLES

5.1 CLIENT-INITIATED TRANSACTION AND RESPONSES

DMV query from client assuming the switch spawns DQ to NLETS and QV to NCIC:

```
<OFML>
  <HDR>
    <ID>0204002453</ID>
    <DAC>DEVA</DAC>
    <DAT>20010824073119</DAT>
    <REF>12345ABCDE</REF>
    <MKE>DQ</MKE>
    <ORI>IN1234567</ORI>
    <DST EID="DRI">VA</DST>
    <CTL>ABC1234567</CTL>
    <SUM>DQ:SMITH,GEORGE</SUM>
  </HDR>
  <TRN>
    <NAM>SMITH,GEORGE</NAM>
    <DOB>19511205</DOB>
    <SEX>M</SEX>
  </TRN>
</OFML>
```

ACK from switch:

```
<OFML>
  <HDR>
    <ID>1234509878</ID>
    <SRC>SWITCH</SRC>
    <DAC>DEVA</DAC>
    <DAT>20010824073123</DAT>
    <REF>12345ABCDE</REF>
    <MKE>ACK</MKE>
    <SUM>DQ:SMITH,GEORGE</SUM>
  </HDR>
  <RSP>
    <TXT>
      DQ TO NLETS
      QW TO NCIC
    </TXT>
  </RSP>
</OFML>
```

Error unrelated to specific field:

```
<OFML>
  <HDR>
    <ID>1234509878</ID>
    <SRC>SWITCH</SRC>
    <DAC>DEVA</DAC>
    <DAT>20010824073123</DAT>
    <REF>12345ABCDE</REF>
    <MKE>ERR</MKE>
    <SUM>DQ:SMITH,GEORGE</SUM>
  </HDR>
  <RSP>
    <COD>123</COD>
    <TXT>NAM OR OLN REQUIRED</TXT>
  </RSP>
</OFML>
```

Alternative format for error unrelated to specific field:

```
<OFML>
  <HDR>
    <ID>1234509878</ID>
    <SRC>SWITCH</SRC>
    <DAC>DEVA</DAC>
    <DAT>20010824073123</DAT>
    <REF>12345ABCDE</REF>
    <MKE>ERR</MKE>
    <SUM>DQ:SMITH,GEORGE</SUM>
  </HDR>
  <RSP>
    <COD>123</COD>
    <TXT>NAM OR OLN REQUIRED</TXT>
  </RSP>
</OFML>
```

Error related to specific field:

```
<OFML>
  <HDR>
    <ID>1234509878</ID>
    <SRC>SWITCH</SRC>
    <DAC>DEVA</DAC>
    <DAT>20010824073123</DAT>
    <REF>12345ABCDE</REF>
    <MKE>ERR</MKE>
    <SUM>DQ:SMITH,GEORGE</SUM>
  </HDR>
  <RSP>
    <COD>321</COD>
    <FLD>LIC</FLD>
    <TXT>MAXIMUM FIELD LENGTH OF 30 CHARACTERS EXCEEDED</TXT>
  </RSP>
</OFML>
```

NLETS response sent to client. This example shows the response as being in textual format, and this in the “TXT” element.

```
<OFML>
  <HDR>
    <ID>1234509876</ID>
    <SRC>NLETS</SRC>
    <DAC>DEVA</DAC>
    <DAT>20010824073123</DAT>
    <REF>12345ABCDE</REF>
    <MKE>DR</MKE>
    <ORI>VA</ORI>
    <DST>IN1234567</DST>
    <CTL>ABC1234567</CTL>
    <SUM>DQ:SMITH,GEORGE</SUM>
  </HDR>
  <RSP>
    <TXT>
      DR.VA
      07:31 08/24/01 17070
      07:31 08/24/01 18545 IN1234567
      TXT
      NAM/SMITH,GEORGE.DOB/19511205.SEX/M
      NO RECORD ON FILE
    </TXT>
  </RSP>
</OFML>
```

NCIC response sent to client:

```
<OFML>
  <HDR>
    <ID>1234509877</ID>
    <SRC>NCIC</SRC>
    <DAC>DEVA</DAC>
    <DAT>20010824073123</DAT>
    <REF>12345ABCDE</REF>
    <MKE>QV</MKE>
    <DST>IN1234567</DST>
    <CTL>ABC1234567</CTL>
    <SUM>DQ:SMITH,GEORGE</SUM>
  </HDR>
  <RSP>
    <TXT>
      1L01XXXXXXXXXXXXXX
      IN1234567
      NO RECORD NAM/SMITH,GEORGE DOB/19511205 SEX/M
    </TXT>
  </RSP>
</OFML>
```

CCH response sent to client containing two (2) records. This shows the use of structured data within the RSP node, as distinct from textual data:

```
<OFML>
  <HDR>
    <ID>1234509876</ID>
    <SRC>CCH</SRC>
    <DAC>DEVA</DAC>
    <DAT>20010824073123</DAT>
    <REF>12345ABCDE</REF>
    <MKE>DR</MKE>
    <DST>IN1234567</DST>
    <CTL>ABC1234567</CTL>
    <SUM>DQ:SMITH,GEORGE</SUM>
  </HDR>
  <RSP>
    <PERSON TYP="REC">
      <LST>SMITH</LST><FST>GEORGE</FST><MID>T</MID>
      <ST1>2521 MERMAID AV</ST1><CIT>WANTAGH</CIT>
      <STA>NY</STA><ZIP>11793</ZIP>
      <SEX>M</SEX><DOB>19601228</DOB>
      <HGT>510</HGT><WGT>150</WGT><EYE>BR</EYE>
    </PERSON>
    <PERSON TYP="REC">
      <LST>SMITH</LST><FST>GEORGE</FST><MID>F</MID>
      <ST1>6325 WOODLAWN DRIVE</ST1><CIT>ACWORTH</CIT>
      <STA>GA</STA><ZIP>30101</ZIP>
      <SEX>F</SEX><DOB>19611016</DOB>
     <HGT>510</HGT><WGT>135</WGT><EYE>HAZ</EYE>
    </PERSON>
  </RSP>
</OFML>
```

5.2 CLIENT-INITIATED TRANSACTION TO ANOTHER CLIENT

AM from initiator:

```
<OFML>
  <HDR>
    <ID>0204002454</ID>
    <SRC>DEVA</SRC>
    <DAT>20010824073156</DAT>
    <REF>12345ABCDF</REF>
    <MKE>AM</MKE>
    <ORI>IN1234567</ORI>
    <DST EID="DRI">IN7654321</DST>
    <DST EID="DRI1">IN7654322</DST>
    <SUM>RECORD REQUEST</SUM>
  </HDR>
  <TRN>
    <TXT>
      PLEASE SEND LOCAL RECORDS FOR FOLLOWING SUBJECT:
      NAM/ANDERSON, RAYMOND   OLN/12345678   DOB/010101
      RAC/W   SEX/M
      OFFICER: SCHWARTZ
      AGENCY : CPD
```

```
        ADDRESS: 1144 FOSTER AVE, CHARLOTTE
      </TXT>
    </TRN>
  </OFML>
```

AM to destination IN7654321:

```
<OFML>
  <HDR>
    <ID>1234509878</ID>
    <SRC>USER</SRC>
    <DAC>DEVB</DAC>
    <DAT>20010824073157</DAT>
    <REF>UNKNOWN</REF>
    <MKE>AM</MKE>
    <ORI>IN1234567</ORI>
    <DST>IN7654321</DST>
    <DST>IN7654321</DST>
    <SUM>RECORD REQUEST</SUM>
  </HDR>
  <TRN>
    <TXT>
      PLEASE SEND LOCAL RECORDS FOR FOLLOWING SUBJECT:
      NAM/ANDERSON, RAYMOND   OLN/12345678   DOB/010101
      RAC/W   SEX/M
      OFFICER: SCHWARTZ
      AGENCY : CPD
      ADDRESS: 1144 FOSTER AVE, CHARLOTTE
    </TXT>
  </TRN>
</OFML>
```

5.3 SWITCH-INITIATED TRANSACTION

NCIC dollar message sent to client:

```
<OFML>
  <HDR>
    <ID>1234509878</ID>
    <SRC>NCIC</SRC>
    <DAC>DEVA</DAC>
    <DAT>20010824073123</DAT>
    <MKE>$NICS</MKE>
  </HDR>
  <TRN>
    <TXT>
      $.NICS.DOWN.
      NICS GOING DOWN.
      NICS WILL BE UNAVAILABLE STARTING AT 0110 EST
    </TXT>
  </TRN>
</OFML>
```

NLETS AM sent to client:

```
   <OFML>
     <HDR
       <ID>1234509878</ID>
       <SRC>NLETS</SRC>
       <DAC>DEVA</DAC>
       <DAT>20010824073123</DAT>
       <REF>UNKNOWN</REF>
       <MKE>AM</MKE>
       <ORI>VA</ORI>
       <DST>IN1234567</DST>
     </HDR>
     <TRN>
       <TXT>
         AM.VA
         07:31 08/24/01 17070
         07:31 08/24/01 18545 IN1234567
         TXT
         PLEASE SEND CERTIFIED DRIVING HISTORY ON FOLLOWING SUBJECT:
         NAM/ANDERSON, RAYMOND   OLN/12345678   DOB/010101
         RAC/W   SEX/M
         DRIVERS LICENSE STATUS/REVOKED
         OFFICER: SCHWARTZ
         AGENCY : TBI
         ADDRESS: 1144 FOSTER AVE, NASH
       </TXT>
     </TRN>
</OFML>
```