The Trusted Automated eXchange of Indicator Information (TAXII™) specifies mechanisms for exchanging structured cyber threat information between parties over the network. This document contains non-normative mappings of content formats to Content Binding IDs.
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Feedback
Feedback on this or any of the other TAXII specifications is welcome and can be sent to taxii-discussion-list@lists.mitre.org after signing up on the community registration page (http://taxii.mitre.org/community/registration.html). You may also provide feedback directly to MITRE by sending a message to taxii@mitre.org.

Comments, questions, suggestions, and concerns are all appreciated.
Table of Contents

Trademark Information........................................................................................................................................... 1
Feedback ................................................................................................................................................................. 1

1 Introduction .......................................................................................................................................................... 3
   1.1 Versioning of this Reference .......................................................................................................................... 3

2 Canonical Content Binding IDs .......................................................................................................................... 3
   2.1 Table of Binding IDs ........................................................................................................................................ 4
   2.2 Structured Threat Information eXpression (STIX) .......................................................................................... 4
   2.3 Common Alerting Protocol (CAP) .................................................................................................................... 5
   2.4 XML Encryption .............................................................................................................................................. 5
   2.5 S/MIME ......................................................................................................................................................... 5
       2.5.1 Sample S/MIME Content Block .............................................................................................................. 6

3 Third Party Defined Content Bindings .................................................................................................................. 7

4 Bibliography ....................................................................................................................................................... 8

5 Revision Record .................................................................................................................................................. 8
1 Introduction
This document provides canonical Content Binding IDs for common forms of content (i.e., structured information for characterizing and responding to cyber threats) that appear within TAXII Messages. Content Binding IDs appear in several TAXII message fields. They can be used to indicate the types of content that are used in a TAXII Data Feed, the types of content a TAXII Service is capable of processing, or to filter the content a TAXII Consumer receives as part of an established subscription.

This document adds no normative requirements to TAXII. Instead, it contains recommended ID values associated with specific types of TAXII content. Implementers may ignore this document and remain conformant to TAXII, but it is strongly encouraged that, when indicating payloads described in this document, the Content Binding IDs given in this document be used as this increases interoperability.

Readers of this document are assumed to be familiar with the terms and requirements that appear in the TAXII Services Specification.

1.1 Versioning of this Reference
The TAXII Content Binding Reference is revised independently of the other TAXII specifications and is not bound to any particular version of TAXII. Instead, it represents a growing list of IDs to be used when indicating a particular content format. Content Binding IDs are never removed from this document, although some may be deprecated in favor of new terms. Thus, all revisions of this document are always backwards compatible. For this reason, this document only uses a single, increasing "revision number" to distinguish between versions.

This document may be revised (i.e., new Content Binding IDs may be added) at any time. In particular, this may occur between releases of the core TAXII specifications.

2 Canonical Content Binding IDs
This section establishes canonical values for Content Binding IDs. Note that this section includes no requirements or recommendations with regard to how the listed content formats are used. Use of a particular Content Binding ID is only used to indicate that some content conforms to the indicated format's requirements.
2.1 Table of Binding IDs
This section provides a quick look-up table of Content Binding IDs. Each content binding is discussed in more detail in subsequent sections:

<table>
<thead>
<tr>
<th>Content Format</th>
<th>Content Binding ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>STIX</td>
<td></td>
</tr>
<tr>
<td>STIX XML 1.0</td>
<td>urn:stix.mitre.org:xml:1.0</td>
</tr>
<tr>
<td>STIX XML 1.0.1</td>
<td>urn:stix.mitre.org:xml:1.0.1</td>
</tr>
<tr>
<td>STIX XML 1.1</td>
<td>urn:stix.mitre.org:xml:1.1</td>
</tr>
<tr>
<td>STIX XML 1.1.1</td>
<td>urn:stix.mitre.org:xml:1.1.1</td>
</tr>
<tr>
<td>CAP</td>
<td></td>
</tr>
<tr>
<td>CAP 1.1</td>
<td>urn:oasis:names:tc:emergency:cap:1.1</td>
</tr>
<tr>
<td>CAP 1.2</td>
<td>urn:oasis:names:tc:emergency:cap:1.2</td>
</tr>
<tr>
<td>XML Encryption, December 2002</td>
<td><a href="http://www.w3.org/2001/04/xmlenc#">http://www.w3.org/2001/04/xmlenc#</a></td>
</tr>
<tr>
<td>S/MIME</td>
<td>application/pkcs7-mime</td>
</tr>
</tbody>
</table>

2.2 Structured Threat Information eXpression (STIX)
"STIX™ is a collaborative community-driven effort to define and develop a standardized language to represent structured cyber threat information." [2] STIX was developed by the MITRE Corporation under contract from the U.S. Department of Homeland Security. The STIX schemas and documentation are available at http://stix.mitre.org/. STIX is a trademark of The MITRE Corporation. The STIX schemas and documentation are copyright by The MITRE Corporation. See the STIX web site for terms of use.

STIX content is currently expressed using XML, but other format bindings may be developed (e.g., JSON). In addition, in the STIX XML schema, the target namespace only indicates the major version of STIX that it defines but does not reflect minor revisions. For these reasons, the STIX XML schema target namespace is not used as the TAXII Content Binding ID and instead a special URI is constructed using the following rules:

"urn:stix.mitre.org:" + format + ":" + version

In this production format reflects the format of the content (e.g., XML, JSON, etc.) while version is the major, minor, and (if present) update number associated with a particular release of STIX. As such, the TAXII Content Binding IDs for STIX XML are:

<table>
<thead>
<tr>
<th>STIX Version</th>
<th>Content Binding ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>STIX XML 1.0</td>
<td>urn:stix.mitre.org:xml:1.0</td>
</tr>
<tr>
<td><a href="http://stix.mitre.org/language/version1.0/">http://stix.mitre.org/language/version1.0/</a></td>
<td></td>
</tr>
<tr>
<td>STIX XML 1.0.1</td>
<td>urn:stix.mitre.org:xml:1.0.1</td>
</tr>
<tr>
<td><a href="http://stix.mitre.org/language/version1.0.1/">http://stix.mitre.org/language/version1.0.1/</a></td>
<td></td>
</tr>
<tr>
<td>STIX XML 1.1</td>
<td>urn:stix.mitre.org:xml:1.1</td>
</tr>
<tr>
<td><a href="http://stix.mitre.org/language/version1.1/">http://stix.mitre.org/language/version1.1/</a></td>
<td></td>
</tr>
<tr>
<td>STIX XML 1.1.1</td>
<td>urn:stix.mitre.org:xml:1.1.1</td>
</tr>
<tr>
<td><a href="http://stix.mitre.org/language/version1.1.1/">http://stix.mitre.org/language/version1.1.1/</a></td>
<td></td>
</tr>
</tbody>
</table>
2.3 Common Alerting Protocol (CAP)

CAP content is expressed using XML. The TAXII Content Binding for CAP is the target namespace of the CAP XML schema. The TAXII Content Binding IDs for CAP are:

<table>
<thead>
<tr>
<th>CAP Version</th>
<th>Content Binding ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAP 1.1</td>
<td>urn:oasis:names:tc:emergency:cap:1.1</td>
</tr>
<tr>
<td><a href="https://www.oasis-open.org/standards#capv1.1">https://www.oasis-open.org/standards#capv1.1</a></td>
<td></td>
</tr>
<tr>
<td>CAP 1.2</td>
<td>urn:oasis:names:tc:emergency:cap:1.2</td>
</tr>
<tr>
<td><a href="https://www.oasis-open.org/standards#capv1.2">https://www.oasis-open.org/standards#capv1.2</a></td>
<td></td>
</tr>
</tbody>
</table>

2.4 XML Encryption
XML Encryption "specifies a process for encrypting data and representing the result in XML." [5] XML Encryption was developed by the World Wide Web Consortium (W3C). The XML Encryption specification is available at http://www.w3.org/TR/xmlenc-core/. The XML Encryption specification is copyright by the W3C. See the XML Encryption specification for terms of use.

XML Encryption is expressed in XML. The TAXII Content Binding ID for XML Encryption is the target namespace of the XML Encryption XML schema. For the latest release of XML Encryption (as of April 2013), the TAXII Content Binding is:

http://www.w3.org/2001/04/xmlenc#

Note that it is generally assumed that XML Encryption will be used to encrypt some other content. See the TAXII Services Specification section on Content Nesting and Encryption (Section 5.3) for more information.

2.5 S/MIME
TAXII users can use S/MIME to express encrypted content directly within a TAXII Content Block. The TAXII Content Binding ID for S/MIME is the MIME type of S/MIME. For S/MIME, the TAXII Content Binding is:

```
application:pkcs7-mime
```

For enhanced interoperability within TAXII applications, applications using this Content Binding ID are recommended to follow these additional guidelines when using S/MIME:

1. The Content-Type MIME Header should specify a type of ‘application/x-pkcs7-mime’
2. If the S/MIME object will be placed in an XML document (i.e., if it is used with the TAXII XML Message Binding), the Content-Transfer-Encoding MIME header should specify a value of ‘base64’.
3. When processing a Content Block that uses the S/MIME Content Binding, care should be taken to preserve whitespace in the Content field. Whitespace, specifically newlines, delineate header fields in MIME and modifying whitespace may result in rendering the Content field unparseable.

Note that it is generally assumed that S/MIME will be used to encrypt some other content. See the TAXII Services Specification section on Content Nesting and Encryption (Section 5.3) for more information.

### 2.5.1 Sample S/MIME Content Block

This section contains a sample S/MIME Content Block that uses the S/MIME Content Binding and adheres to the Additional Guidelines.

```xml
<taxii_11:Content_Block>
  <taxii_11:Content_Binding binding_id="application/pkcs7-mime"/>
  <taxii_11:Content>
    MIME-Version: 1.0
    Content-Disposition: attachment; filename="smime.p7m"
    Content-Type: application/x-pkcs7-mime; smime-type=enveloped-data; name="smime.p7m"
    Content-Transfer-Encoding: base64
    MIICbgYJKoZIhvcNAQcDoIICXzCCAlsCAQAxggEzMIIBlwIBAdCBHozBiTLEMAkG
    A1UEBhMCMVVMxCzAIBgNVBAMgMAkIBMRDAwDgYDVQQHDCAmZWRmb3JkMQ4wDAYDVQQK
    DAVSNVSRTEQMA4GA1UECwwHSX5mb1NIYzEUMBMGAMaUEAwMTWFyq0Rdhmlkc29u
    MSFWIAYJKoZIhvcNAQkFBohIgHwFwWDAICAQIwMD4wMDEuMjAxMB8GA1UdEwEB
    MIIBGAYKKWUBLzAzBgiIgCIADBBQGgAQEEFiVANbFQaO2CtsuNbh3HtB
    JHAU0av9Iljk5xBTaRdxUx8xoOIONMFZhl0j14XZ/C7Hb7oosnK2IZ360LG0Gp
    O06KJv6H1e2tIvbx3aCwY0EkTVeeTCqYzNZ8cLJYxOeh00ExXnii49j02Rzul3
    GjCCAR0GCSqSIhb3DQEHAQATBglghkgBZQMEASoEEF05tj7JprSVSIPV27n3F0qA
    gft+jah7ZsmHeCq7W530GaahPWSrTRjBeNmetFiUip5wtq8Dhv5x9OVxv3sK
    VWVwEmAnp9JZIXbhxXfsX3LqNrs69GI3KgAbF/QXxyLR8HgZfQIP1ieEIBlIvM1
    iswLtgkrRovJBmSnmqrmpmvYVGAPCYIb9NYwnix0jb3iPtf1nFKMV6ypp4T0RvkV
    z6mmC0NKyV7rO1Q/EwEmrSj9m/o+PaHqoxTTG8TWLtZ/Eep7X/htvR21ZkceEd
    0gQ3TDX50VNhT7eqhATUegR3mVqL/HDP79TarwDwXPxHBM7Jy+BIAXXlmBFUpPB8
    nx4=
  </taxii_11:Content>
</taxii_11:Content_Block>
```
3 Third Party Defined Content Bindings

Third parties may define their own Content Binding IDs for any form of content. The TAXII Services Specification prohibits Content Binding IDs defined by third parties from duplicating Content Binding IDs that appear in this document.

Third parties that define their own Content Binding IDs are encouraged to submit these IDs to the TAXII community to encourage greater interoperability between TAXII users. If there is significant interest in the identified binding, it may be incorporated in this document.
4 Bibliography


5 Revision Record

- Version 1 - First version. Includes bindings for STIX 1.0, CAP 1.1, and XML Encryption from December 2002
- Version 2 - Added a binding for CAP 1.2
- Version 3 – Added Content Binding IDs for S/MIME, STIX 1.0.1, STIX 1.1, and STIX 1.1.1.