THE MITRE CORPORATION

The TAXII XML Message Binding Specification

Version 1.0

Mark Davidson, Charles Schmidt

04/30/2013

The Trusted Automated eXchange of Indicator Information (TAXII™) specifies mechanisms for exchanging structured cyber threat information between parties over the network. This document describes how to express TAXII messages using an XML binding.

Trademark Information

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).

Comments, questions, suggestions, and concerns are all appreciated.

Table of Contents

1 Introduction

This document describes how to express TAXII Messages using XML [1] syntax. The use of these messages to support TAXII Services is described separately in the TAXII Services Specification [2]. It is recommended that the reader familiarize themself with the TAXII Services Specification prior to reading this document.

1.1 The TAXII XML Message Binding Specification

This specification provides normative text on the expression of TAXII Messages using XML syntax. It does not provide details about how TAXII Messages are transported, leaving that to a Protocol Binding Specification. The TAXII Services and TAXII Message Exchanges that these Messages support, as well as a detailed discussion of the meaning of message fields, are discussed in detail in the TAXII Services specification.

1.1.1 TAXII Message Binding Version ID for XML

The TAXII Message Binding Version ID for the version of the XML Binding described in this specification is:

`urn:taxii.mitre.org:message:xml:1.0`

1.1.2 The TAXII XML Schema

This document is accompanied by an XML schema as a means to clarify the requirements surrounding TAXII XML Message structures. The schema is provided as an aid to developers and implementers but is not normative. If there is ever disagreement between the specification and the schema the specification is considered correct. In particular, due to the limitations of XML schemas, the schema permits some structures that are prohibited by the specification.

An XML schema is provided for each major and minor release of this specification. The full version of this specification associated with a given schema is reflected in the version attribute in the top-level `<schema>` element of the schema file. The major version of the specification also appears as part of the XML target namespace of the defined schema. For version 1.0 and all subsequent minor releases within this major release, the target namespace of the TAXII XML Message Binding schema is:

`"http://taxii.mitre.org/messages/taxii_xml_binding-1"`

1.2 Document Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this specification are to be interpreted as described in IETF RFC 2119. [3]

When making references to XML elements and attributes as well as other XML literals (such as enumerated values), this document uses `Courier New Font`. XML element names are denoted by non-namespaced text surrounded by angle brackets (e.g., `<TAXII_Discovery_Request>`) while attribute names are preceded by an "at" symbol (e.g., `@message_id`).

1.3 Terms and Definitions

This document uses the Terms and Definitions defined in the TAXII Services Specification and TAXII Overview [4]. In addition, this document defines terms that are assigned a specific meaning within this specification.

1.3.1 XML Binding Terms

The TAXII Services Specification identifies a number of fields for each TAXII Message Type. This specification specifies those fields as XML structures. The Services Specification discusses fields in terms of general concepts they are meant to convey, while this specification represents fields as precise character patterns to represent information. When the distinction between these two uses of "field" is important, this document uses the following terms:

Data Model Field - A field defined in the TAXII Message data model that appears in the TAXII Services Specification. For example, all messages have a "Message ID" Data Model Field that contains a message identifier.

XML Field - A field expressed using the XML syntax defined in this specification. XML Fields correspond to either an XML element or an XML attribute. For example, all messages have a "`@message_id`" XML Field that contains a value identifying the message using the XML string type.

Note that there is not always a one-to-one mapping between a Data Model Field and an XML Field. Such situations are noted where they occur.

2 TAXII XML Message Binding Overview

This section considers some of the underlying concepts behind the TAXII XML Message Binding. It considers the overall structure of a TAXII Message in this binding and also considers the meanings of certain Data Model Field values and the details of their expression using XML Field values.

2.1 TAXII XML Message Binding Structure

The TAXII XML Message Binding defines requirements regarding the overall structuring of TAXII Messages using XML. These requirements are described in the following subsections.

2.1.1 Messages are Root Elements

A separate XML element is defined to represent each type of TAXII Message. Each element that represents a TAXII Message can appear as a root element in an XML document. In XML schema parlance, this means all TAXII Message elements are global elements. Moreover, this specification does not define any elements that contain TAXII Message elements. As such, within this TAXII Message Binding, TAXII Message elements do not appear as descendants of other elements.

One side effect of this is that this specification does not define any way to include multiple TAXII Messages within a single XML document. This reflects that, in TAXII Message Exchanges, there is no situation where multiple TAXII Messages can be sent in a single transmission.

2.1.2 No Header and Body Field Distinction

All TAXII Messages consist of a header and a body. TAXII Header fields represent information that is required by all TAXII Message Body Types, while TAXII Body fields contain information that is specific to a particular TAXII Message Body Type. This specification does not distinguish between TAXII Header fields and TAXII Body fields. In other words, there is not a dedicated region containing all TAXII Header content and a separate region containing all TAXII body content. Instead, both types of fields exist as peers in the XML of a TAXII Message. This document does not treat the header and body fields separately or otherwise differentiate between them.

2.1.3 Strict Ordering of Elements

In this specification, all XML fields that use XML elements use a strict ordering of fields. (In XML schema parlance, elements are defined in a sequence.) This allows parsers to quickly locate specific fields and to know how many times a given field appears without needing to parse the entire document.

XML attributes can appear in any order within their parent XML element.

2.1.4 Message Schema Validation

Neither senders nor recipients are required to perform schema validations on messages that they send or receive, respectively. Senders of messages that use this message binding are required to conform to the requirements of this specification regardless of the use of schema validation. If a message recipient detects an incorrectly formatted message, either through schema validation or other means, the recipient SHOULD respond with a Status Message with a status type of "Bad Message".

2.1.5 Version and Binding IDs

Note that, in terms of processing, the TAXII XML Message Binding Specification does not distinguish between Version IDs and Content Binding IDs that are defined by TAXII specifications and those defined by third parties. Use of the terms TAXII Protocol Version ID, TAXII Message Version ID, and Content Binding ID are used throughout this document without regard to the source of that ID.

2.2 Special Field Values

Several TAXII Message fields appear in multiple TAXII Messages and have a specialized structure and/or important meaning. This section looks at these fields, identifies the requirements that govern their values, and explains how they are represented in XML.

2.2.1 Message ID

Every TAXII Message has a Message ID field. Message ID values link requests with responses. Specifically, if TAXII Message B is sent in response to TAXII Message A, Message B will contain an "In Response To" field whose value is equal to the value of the Message ID field in Message A.

The TAXII XML Message Binding requires XML Fields that contain Message IDs be XML strings that are limited to digits. (XML Unsigned Integers allow a plus preceding a number, and thus are incompatible with the restrictions on this field defined in the TAXII Services Specification.)

2.2.2 Timestamp Labels

In TAXII, each piece of content within a TAXII Data Feed is assigned a unique Timestamp Label value. Timestamp Labels are used to allow Consumers to indicate which parts of a TAXII Data Feed they are requesting in a Poll Request Message.

The TAXII XML Message Binding requires XML Fields that contain Timestamp Labels to be XML dateTime values. In addition, these values MUST include a time zone component (i.e., either "Z" or a numerical offset), in accordance with the date-time production in RFC 3339 [5]. Timestamp Labels field values MUST NOT contain fractional seconds with more than six decimal places of precision.

2.2.3 Extended Headers

TAXII allows the specification of extended headers in all TAXII Messages. All extended headers are defined by third parties outside the TAXII specifications. Extended headers in TAXII are represented as name-value pairs.

In the TAXII XML Message Binding, extended header names conform to URI formatting [6]. Values in an extended header can be any content, including other XML elements. In this binding, the value undergoes lax processing - if the provider of the third party value includes XML elements that conform to some other XML schema then XML validation can check for schema conformance but lack of a schema does not cause validation to fail.

2.2.4 Status Details

Some status types defined in the TAXII Services Specification include a Status Detail value that conveys machine-readable information relevant to the status type. For status types defined in the TAXII Services Specification for which Status Detail values are provided, third parties MUST NOT add to or alter the contents of the Status Detail field. Third parties MAY add Status Detail content to status types defined in the TAXII Services Specification which do not suggest Status Detail values. Third parties MAY also add Status Detail content for status types that they define. Third parties SHOULD NOT add to or alter the contents of the Status Detail field for status types defined by a different third party without coordinating with that party to ensure there will not be misinterpretation.

3 TAXII XML Messages

This section defines the XML structures used to express TAXII Messages as defined in Section 3 of the TAXII Services Specification. Each TAXII Message type is described below using tables that contain each Message Type's fields. XML elements can have child attributes or elements. Parent-child relationships are reflected in the tables below by indenting the attributes and child elements relative to their parent. XML elements in TAXII Messages MUST appear in the order in which they appear in these tables. XML attributes can appear in TAXII Messages in any order within their parent element.

For each XML Field, the following information is provided:

- XML Name - The element name or attribute name of an XML Field. If the XML Field is an element it appears between angle brackets (<>) and if it is an attribute it appears preceded by an "at" sign (@).
- Data Model Name - The name of the Data Model Field as provided in the TAXII Message data model in the TAXII Services Specification. Note that if multiple XML Fields are needed to convey the meaning in a single Data Model Field, all of these XML Fields would be assigned the same Data Model Name value.
- # - The number of times the XML Field can appear within a parent element, expressed either as a single digit or a range. If a field is optional, it is always expressed as a range with a lower bound of '0'. If a field can appear an unlimited number of times, it is always expressed as a range with an upper bound of 'n'. Note that a field might be "required" in the Message Data Model, but be optional in the XML structure. This can happen either by assigning a default value to the XML Field or otherwise ascribing meaning to an XML Field's absence. Note also that a required field that is a child of an optional field would only be present if its parent field was present.
- Value - Constraints on the permissible values of this XML Field. This would include the XML data type and other requirements.

The following sections define XML structures for all defined TAXII Message.

3.1 TAXII Status Message

Table 1 - TAXII Status Message Fields

XML Name	Data Model Name	#	Value
<Status_Message>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string constrained to only contain digits
@in_response_to	In Response To	1	An XML string equal to the value of the @message_id field to which this message is a response
@status_type	Status Type	1	An XML AnyURI; either one of the values provided in Table 2 or a third party defined value.
<Extended_Headers>	Extended-Header	0-1	Contains one or more <Extended_Header> elements.
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.

XML Name	Data Model Name	#	Value
<Status_Detail>	Status Detail	0-1	An XML String. This field SHOULD be present if and only if the given @status_type value defines a value for it. For @status_type values that appear in Table 2, this field (if present) MUST contain only the information identified in that table.
<Message>	Message	0-1	An XML string.
<ds:Signature>	Signature	0-1	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

Certain @status_type values define a value for the <Status_Detail> field. If the <Status_Detail> field is present with one of those @status_type values the <Status_Detail> field MUST only contain specifically formatted information appropriate to that status. Table 2 identifies the @status_type field values which SHOULD have a corresponding <Status_Detail> field and what that <Status_Detail> MUST contain if present. Status types that are empty in the "<Status_Detail> Value" column MAY include third party defined information in a <Status_Detail> field. For third party defined status types, that that third party MAY determine whether or not a <Status_Detail> field SHOULD be present and what value it contains.

Table 2 - Defined Status Types

@status_type Value	Error Status Type	<Status_Detail> Value
BAD_MESSAGE	Bad Message	
DENIED	Denied	
FAILURE	Failure	
NOT_FOUND	Not Found	
POLLING_UNSUPPORTED	Polling Not Supported	
RETRY	Retry	A timestamp indicating a time when the request might be repeated and fulfilled. The timestamp MUST conform to the RFC 3339 production for a date-time value [5].
SUCCESS	Success	
UNAUTHORIZED	Unauthorized	

@status_type Value	Error Status Type	<Status_Detail> Value
UNSUPPORTED_MESSAGE	Unsupported Message Binding	A space-separated list of Message Binding IDs indicating supported message bindings.
UNSUPPORTED_CONTENT	Unsupported Content Binding	A space-separated list of Content Binding IDs indicating supported contents.
UNSUPPORTED_PROTOCOL	Unsupported Protocol	A space-separated list of Protocol Binding IDs indicating supported protocol bindings.

3.2 TAXII Discovery Request

Table 3 - TAXII Discovery Request Fields

XML Name	Data Model Name	#	Value
<Discovery_Request>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string containing only digits
<Extended_Headers>	Extended-Header	0-1	Contains one or more <Extended_Header> elements.
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.
<ds:Signature>	Signature	0-1	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

3.3 TAXII Discovery Response

Table 4 - TAXII Discovery Response Fields

XML Name	Data Model Name	#	Value
<Discovery_Response>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string containing only digits.
@in_response_to	In Response To	1	An XML string containing only digits and equal to the value of the @message_id field to which this message is a response
<Extended_Headers>	Extended-Header	0-1	Contains one or more <Extended_Header> elements.

XML Name	Data Model Name	#	Value
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.
<Service_Instance>	Service Instance	0-n	Contains only the indicated XML Fields. This element MAY appear any number of times with each instance corresponding to a single reported TAXII Service instance.
@service_type	Service Type	1	This field MUST contain one of the values given in Table 5.
@service_version	Services Version	1	An XML AnyURI containing a TAXII Services Version ID.
@available	Available	0-1	An XML boolean. If present, indicates if the requester is known to have access to this service. If absent, treat access as unknown.
<Protocol_Binding>	Protocol Binding	1	An XML AnyURI containing a TAXII Protocol Binding Version ID.
<Address>	Service Address	1	An XML string representing a network address.
<Message_Binding>	Message Binding	1-n	An XML AnyURI containing a TAXII Message Binding Version ID. This field MUST appear one or more times with each instance indicating a different supported binding.
<Content_Binding>	Inbox Service Accepted Content	0-n	An XML AnyURI containing a Content Binding ID. If the value of @service_type is something other than INBOX, this field SHOULD NOT be included by the sender and MUST be ignored by the message recipient. If the value of @service_type is INBOX each instance of this field indicates a different supported binding. If the value of @service_type is INBOX but there are no instances of this field, the identified Inbox Service accepts all content bindings.
<Message>	Message	0-1	An XML string.
<ds:Signature>	Signature	0-1	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

The @service_type field identifies the type of service reported in the given <Service_Instance>. Its value MUST be one of the values provided in Table 5.

Table 5 - Service Types

Service	@service_type Value
Discovery Service	DISCOVERY
Feed Management Service	FEED_MANAGEMENT
Inbox Service	INBOX
Poll Service	POLL

3.4 TAXII Feed Information Request

Table 6 - TAXII Feed Information Request Fields

XML Name	Data Model Name	#	Value
<Feed_Information_Request>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string containing only digits
<Extended_Headers>	Extended-Header	0-1	Contains one or more <Extended_Header> elements.
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.
<ds:Signature>	Signature	0-1	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

3.5 TAXII Feed Information Response

Table 7 - TAXII Feed Information Response Fields

XML Name	Data Model Name	#	Value
<Feed_Information_Response>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string containing only digits

XML Name	Data Model Name	#	Value
@in_response_to	In Response To	1	An XML string containing only digits and equal to the value of the @message_id field to which this message is a response
<Extended_Headers>	Extended-Header	1	Contains one or more <Extended_Header> elements.
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.
<Feed>	Feed Information	0-n	Contains only the indicated child fields. Appears once for each TAXII Data Feed reported in this message.
@feed_name	Feed Name	1	An XML anyURI containing the Feed Name for this TAXII Data Feed.
@available	Available	0-1	An XML boolean. If present, indicates if the requester is known to have access to this service. If absent, treat access as unknown.
<Description>	Feed Description	1	An XML string.
<Content_Binding>	Supported Content	1-n	An XML AnyURI containing a Content Binding ID. Each instance indicates a binding used by content in this TAXII Data Feed.
<Push_Method>	Push Method	0-n	The body of this element MUST consist only of the indicated XML Fields. Each instance of this field indicates one set of bindings that can be used to push content to a Consumer's Inbox Service. At least one instance of a <Push_Method> or <Polling_Service> element MUST be present. Both types of elements MAY be present.
<Protocol_Binding>	Push Protocol	1	An XML AnyURI containing a TAXII Protocol Binding Version ID.
<Message_Binding>	Push Message Binding	1-n	An XML AnyURI containing a TAXII Message Binding Version ID. This field MUST appear one or more times with each instance indicating a different supported binding.

XML Name	Data Model Name	#	Value
<Polling_Service>	Polling Service Instance	0-n	The body of this element MUST consist only of the indicated XML Fields. Each instance of this field indicates one Poll Service instance that can be used to poll for content from this Data Feed. At least one instance of a <Push_Method> or <Polling_Service> element MUST be present. Both types of elements MAY be present.
<Protocol_Binding>	Poll Protocol	1	An XML AnyURI containing a TAXII Protocol Binding Version ID.
<Address>	Poll Address	1	An XML string representing a network address.
<Message_Binding>	Poll Message Binding	1-n	An XML AnyURI containing a TAXII Message Binding Version ID. This field MUST appear one or more times with each instance indicating a different supported binding.
<Subscription_Service>	Subscription Method	0-n	The body of this element MUST consist only of the indicated XML Fields. Each instance of this field indicates one Feed Management Service that can be used to establish a subscription to this Data Feed. If no instances of this field are present, subscriptions cannot be established using TAXII messages.
<Protocol_Binding>	Subscription Protocol	1	An XML AnyURI containing a TAXII Protocol Binding Version ID.
<Address>	Subscription Address	1	An XML string representing a network address.
<Message_Binding>	Subscription Message Binding	1-n	An XML AnyURI containing a TAXII Message Binding Version ID. This field MUST appear one or more times with each instance indicating a different supported binding.
<ds:Signature>	Signature	0-1	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

3.6 TAXII Manage Feed Subscription Request

Table 8 - TAXII Feed Information Request Fields

XML Name	Data Model Name	#	Value
<Subscription_Management_Request>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string containing only digits
@action	Action	1	This field MUST contain one of the values given in Table 9.
@feed_name	Feed Name	1	An XML AnyURI containing the Feed Name for the TAXII Data Feed.
@subscription_id	Subscription ID	0-1	An XML AnyURI containing a Subscription ID value. This field MUST be present if @action="UNSUBSCRIBE". For other values of @action senders SHOULD NOT include this field and recipients MUST ignore this field.
<Extended_Headers>	Extended-Header	0-1	Contains one or more <Extended_Header> elements.
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.
<Push_Parameters>	Delivery Parameters	0-1	The body of this element, if present, MUST consist only of the indicated XML Fields. For values of @action other than SUBSCRIBE senders SHOULD NOT include this field and recipients MUST ignore this field. If @action="SUBSCRIBE" and this field is absent then the sender is indicating that it does not want content pushed to an Inbox service. (I.e., the sender will poll for content.)
<Protocol_Binding>	Inbox Protocol	1	An XML AnyURI containing a TAXII Protocol Binding Version ID.
<Address>	Inbox Address	1	An XML string representing a network address.
<Message_Binding>	Delivery Message Binding	1	An XML AnyURI containing a TAXII Message Binding Version ID.

XML Name	Data Model Name	#	Value
<Content_Binding>	Content Binding	0-n	An XML AnyURI containing a Content Binding ID. Each instance indicates an acceptable binding for pushed content. If there are no instances of this field, this indicates that the identified Inbox Service accepts all content bindings.
<ds:Signature>	Signature	0-1	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

The @action field contains a value indicating what subscription management action is to be taken. Possible values for this field appear in Table 9.

Table 9 - Feed Management Actions

@action Value	Management Action
SUBSCRIBE	SUBSCRIBE - Request a subscription to the named TAXII Data Feed
UNSUBSCRIBE	UNSUBSCRIBE - Request cancellation of an existing subscription to the named TAXII Data Feed
STATUS	STATUS - Request information on all subscriptions the requester has established for the named TAXII Data Feed.

3.7 TAXII Manage Feed Subscription Response

Table 10 - TAXII Feed Information Response Fields

XML Name	Data Model Name	#	Value
<Subscription_Management_Response>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string containing only digits
@in_response_to	In Response To	1	An XML string containing only digits and equal to the value of the @message_id field to which this message is a response
@feed_name	Feed Name	1	An XML AnyURI containing the Feed Name for the TAXII Data Feed.
<Extended_Headers>	Extended-Header	1	Contains one or more <Extended_Header> elements.
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.

XML Name	Data Model Name	#	Value
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.
<Message>	Message	0-1	An XML string.
<Subscription>	Subscription Instance	0-n	This field contains only the indicated child fields. It MAY appear any number of times (including 0) if this message is in response to a Manage Feed Subscription Request message with @action="STATUS". Each instance reports a different subscription to the named Data Feed. This field MUST appear exactly once for all other @action values.
@subscription_id	Subscription ID	1	An XML AnyURI containing a Subscription ID value.
<Push_Parameters>	Delivery Parameters	0-1	This field contains only the indicated child fields. This field MUST be present if and only if this message is in response to a request with @action="STATUS" and the request that established this subscription included a <Push_Parameters>. (I.e., they requested feed content be pushed to an Inbox Service.) This XML Field SHOULD NOT be included by the sender and MUST be ignored by the recipient when responding to requests with an @action value other than STATUS. Note that, the TAXII Services Specification does not prohibit Delivery Parameters from being present when responding to actions other than STATUS, but this specification overrides that to avoid ambiguity.
<Protocol_Binding>	Inbox Protocol	1	An XML AnyURI containing a TAXII Protocol Binding Version ID. Contains an exact copy of the <Protocol_Binding> field from the Manage Feed Subscription Request Message that established this subscription.
<Address>	Inbox Address	1	An XML string representing a network address. Contains an exact copy of the <Address> field from the Manage Feed Subscription Request Message that established this subscription.

XML Name	Data Model Name	#	Value
<Message_Binding>	Delivery Message Binding	1	An XML AnyURI containing a TAXII Message Binding Version ID. Contains an exact copy of the <Message_Binding> field from the Manage Feed Subscription Request Message that established this subscription.
<Content_Binding>	Content Binding	0-n	An XML AnyURI containing a Content Binding ID. Contains an exact copy of the <Content_Binding> field from the Manage Feed Subscription Request Message that established this subscription. One instance of this field MUST appear for each instance in the request that established the subscription. Note that if this field is absent in the request establishing this subscription it will be absent here as well.
<Poll_Instance>	Poll Instance	0-n	This field contains only the indicated child fields. If this message is in response to a Manage Feed Subscription Request message with @action value other than UNSUBSCRIBE, then this field MUST be present if the requester indicated that they wanted to poll for content. (I.e., there was no <Push_Parameters> field in the request that established this subscription.) It SHOULD NOT be present for requests with an @action value of UNSUBSCRIBE. It MAY be present in all other circumstances.
<Protocol_Binding>	Poll Protocol	1	An XML AnyURI containing a TAXII Protocol Binding Version ID.
<Address>	Poll Address	1	An XML string representing a network address.
<Message_Binding>	Poll Message Binding	1-n	An XML AnyURI containing a TAXII Message Binding Version ID.
<ds:Signature>	Signature	0-1	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

3.8 TAXII Poll Request

Table 11 - TAXII Poll Request Fields

XML Name	Data Model Name	#	Value
<Poll_Request>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string containing only digits
@feed_name	Feed Name	1	An XML AnyURI containing the Feed Name for the TAXII Data Feed.
@subscription_id	Subscription ID	0-1	An XML string containing a Subscription ID value.
<Extended_Headers>	Extended-Header	0-1	Contains one or more <Extended_Header> elements.
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.
<Exclusive_Begin_Timestamp>	Exclusive Begin Timestamp Label	0-1	An XML dateTime value containing a Timestamp Label. If this field is absent, it indicates this request has no lower bound.
<Inclusive_End_Timestamp>	Inclusive End Timestamp Label	0-1	An XML dateTime value containing a Timestamp Label. If this field is absent, it indicates this request has no upper bound.
<Content_Binding>	Supported Content	0-n	An XML AnyURI containing a Content Binding ID. Each instance indicates an acceptable binding for content in the Poll Response message. If there are no instances of this field, this indicates that all content bindings are acceptable.
<ds:Signature>	Signature	0-1	This element is defined in th XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

Note that if both <Exclusive_Begin_Timestamp> and <Inclusive_End_Timestamp> are present in this message, the value in <Inclusive_End_Timestamp> MUST be greater than the value in <Exclusive_Begin_Timestamp>.

3.9 TAXII Poll Response

Table 12 - TAXII Poll Request Fields

XML Name	Data Model Name	#	Value
<Poll_Response>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string containing only digits
@in_response_to	In Response To	1	An XML string containing only digits and equal to the value of the @message_id field to which this message is a response
@feed_name	Feed Name	1	An XML AnyURIcontaining the Feed Name for the TAXII Data Feed.
@subscription_id	Subscription ID	0-1	An XML AnyURI containing a Subscription ID value.
<Extended_Headers>	Extended-Header	1	Contains one or more <Extended_Header> elements.
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.
<Message>	Message	0-1	An XML string.
<Inclusive_Begin_Timestamp>	Inclusive Begin Timestamp Label	0-1	An XML dateTime value containing a Timestamp Label. If this field is absent, it indicates the response covers the earliest content within the Data Feed.
<Inclusive_End_Timestamp>	Inclusive End Timestamp Label	1	An XML dateTime value containing a Timestamp Label.
<Content_Block>	Content Block	0-n	This field contains only the indicated child fields.
<Content_Binding>	Content Binding	1	An XML string containing a Content Binding ID or a content nesting expression (as described in the TAXII Services Specification).
<Content>	Content	1	The body of this element supports mixed content and MAY contain any XML.

XML Name	Data Model Name	#	Value
<Timestamp_Label>	Timestamp Label	0-1	An XML dateTime value containing a Timestamp Label.
<Padding>	Padding	0-1	An XML string.
<ds:Signature>	Signature	0-n	This element is defined in the XML Signature Syntax and Processing specification [7]. This signature is scoped to the <Content_Block> element in which it resides.
<ds:Signature>	Signature	0-1	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

3.10 TAXII Inbox Message

Table 13 - TAXII Inbox Message Fields

XML Name	Data Model Name	#	Value
<Inbox_Message>	Message Body Type	1	The element name indicates the message body type. Its body MUST consist only of the indicated XML Fields.
@message_id	Message ID	1	An XML string containing only digits
<Extended_Headers>	Extended-Header	0-1	Contains one or more <Extended_Header> elements.
<Extended_Header>	Extended-Header	1-n	The body of this element supports mixed content and MAY contain any XML, as described in Section 2.2.3.
@name	Extended-Header	1	An XML AnyURI with the name of this extended header.
<Message>	Message	0-1	An XML string.
<Source_Subscription>	Subscription Information	0-1	This field contains only the indicated child fields.
@feed_name	Feed Name	0-1	An XML AnyURI containing the Feed Name for the TAXII Data Feed.
@subscription_id	Subscription ID	0-1	An XML AnyURI containing a Subscription ID value.

XML Name	Data Model Name	#	Value
<Inclusive_Begin_Timestamp>	Inclusive Begin Timestamp Label	0-1	An XML dateTime value containing a Timestamp Label. If this field is absent, it indicates the response covers the earliest content within the Data Feed.
<Inclusive_End_Timestamp>	Inclusive End Timestamp Label	1	An XML dateTime value containing a Timestamp Label.
<Content_Block>	Content Block	0-n	This field contains only the indicated child fields.
<Content_Binding>	Content Binding	1	An XML string containing a Content Binding ID or a content nesting expression (as described in the TAXII Services Specification).
<Content>	Content	1	The body of this element supports mixed content and MAY contain any XML.
<Timestamp_Label>	Timestamp Label	0-1	An XML dateTime value containing a Timestamp Label.
<Padding>	Padding	0-1	An XML string.
<ds:Signature>	Signature	0-n	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and is scoped to the <Content_Block> element in which it resides.
<ds:Signature>	Signature	0-1	This element is defined in the XML Signature Syntax and Processing specification [7]. This is an enveloped signature and the potential scope of this signature is the entire TAXII Message.

4 Bibliography

[1] T. Bray, J. Paoli, C. M. Sperberg-McQueen, E. Maler and F. Yergeau, "Extensible Markup Language (XML) 1.0 (Fifth Edition)," W3C, 2008.

[2] The MITRE Corp., "The TAXII Services Specification 1.0," The MITRE Corp., 2013.

[3] S. Bradner, "RFC 2119 - Key words for use in RFCs to Indicate Requirement Levels," The Internet Engineering Task Force, 1997.

[4] The MITRE Corp., "TAXII Overview 1.0," The MITRE Corp., 2013.

[5] G. Klyne and C. Newman, "RFC 3339 - Date and Time on the Internet: Timestamps," The Internet Engineering Task Force, 2002.

[6] T. Berners-Lee, R. Fielding and L. Masinter, "RFC 3986 - Uniform Resource Identifier (URI): Generic Syntax," The Internet Engineering Task Force, 2005.

[7] M. Bartel, J. Boyer, B. Fox, B. LaMacchia and E. Simon, "XML Signature Syntax and Processing," W3C, 2008.