python-stix Documentation

Release 1.2.0.11

The MITRE Corporation

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Contents

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The **python-stix** library provides an API for developing and consuming *Structured Threat Information eXpression* (**STIX**) content. Developers can leverage the API to develop applications that create, consume, translate, or otherwise process STIX content. This page should help new developers get started with using this library. For more information about STIX, please refer to the STIX website.

Note: These docs provide standard reference for this Python library. For documentation on *idiomatic* usage and *common patterns*, as well as various STIX-related information and utilities, please visit the STIXProject at GitHub.

CHAPTER 1

Versions

Each version of python-stix is designed to work with a single version of the STIX Language. The table below shows the latest version the library for each version of STIX.

STIX Version	python-stix Version
1.2	1.2.0.11 (PyPI) (GitHub)
1.1.1	1.1.1.18 (PyPI) (GitHub)
1.1.0	1.1.0.6 (PyPI) (GitHub)
1.0.1	1.0.1.1 (PyPI) (GitHub)
1.0	1.0.0a7 (PyPI) (GitHub)

Users and developers working with multiple versions of STIX content may want to take a look at stix-ramrod, which is a library designed to update STIX and CybOX content.

Check out the Working with python-stix section for examples on how to integrate **stix-ramrod** and **python-stix**.

CHAPTER 2

Contents

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2.1 Installation

The installation of python-stix can be accomplished through a few different workflows.

2.1.1 Recommended Installation

Use pypi and pip:

```
$ pip install stix
```

You might also want to consider using a virtualenv. Please refer to the pip installation instructions for details regarding the installation of pip.

2.1.2 Dependencies

The python-stix library relies on some non-standard Python libraries for the processing of STIX content. Revisions of python-stix may depend on particular versions of dependencies to function correctly. These versions are detailed within the distutils setup.py installation script.

The following libraries are required to use python-stix:

- lxml - A Pythonic binding for the C libraries **libxml2** and **libxslt**.
- python-cybox - A library for consuming and producing CybOX content.
- python-dateutil - A library for parsing datetime information.

Each of these can be installed with `pip` or by manually downloading packages from PyPI. On Windows, you will probably have the most luck using pre-compiled binaries for `lxml`. On Ubuntu (12.04 or 14.04), you should make sure the following packages are installed before attempting to compile `lxml` from source:

- libxml2-dev
- libxslt1-dev
- zlib1g-dev

Warning: Users have encountered errors with versions of libxml2 (a dependency of lxml) prior to version 2.9.1. The default version of libxml2 provided on Ubuntu 12.04 is currently 2.7.8. Users are encouraged to upgrade libxml2 manually if they have any issues. Ubuntu 14.04 provides libxml2 version 2.9.1.

2.1.3 Manual Installation

If you are unable to use pip, you can also install python-stix with setuptools. If you don't already have setuptools installed, please install it before continuing.

1. Download and install the *dependencies* above. Although setuptools will generally install dependencies automatically, installing the dependencies manually beforehand helps distinguish errors in dependency installation from errors in stix installation. Make sure you check to ensure the versions you install are compatible with the version of stix you plan to install.
2. Download the desired version of stix from PyPI or the GitHub releases page. The steps below assume you are using the 1.2.0.11 release.
3. Extract the downloaded file. This will leave you with a directory named stix-1.2.0.11.

```
$ tar -zxf stix-1.2.0.11.tar.gz
$ ls
stix-1.2.0.11 stix-1.2.0.11.tar.gz
```

OR

```
$ unzip stix-1.2.0.11.zip
$ ls
stix-1.2.0.11 stix-1.2.0.11.zip
```

4. Run the installation script.

```
$ cd stix-1.2.0.11
$ python setup.py install
```

5. Test the installation.

```
$ python
Python 2.7.6 (default, Mar 22 2014, 22:59:56)
[GCC 4.8.2] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> import stix
>>>
```

If you don't see an `ImportError`, the installation was successful.

2.1.4 Further Information

If you're new to installing Python packages, you can learn more at the Python Packaging User Guide, specifically the Installing Python Packages section.

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2.2 Getting Started

This page gives an introduction to **python-stix** and how to use it.

Note: This page is being actively worked on; feedback is always welcome.

2.2.1 Prerequisites

The python-stix library provides an API for creating or processing STIX content. As such, it is a developer tool that can be leveraged by those who know Python 2.7/3.3+ and are familiar with object-oriented programming practices, Python package layouts, and are comfortable with the installation of Python libraries. To contribute code to the python-stix repository, users must be familiar with git and GitHub pull request methodologies. Understanding XML, XML Schema, and the STIX language is also incredibly helpful when using python-stix in an application.

2.2.2 Your First STIX Application

Once you have installed python-stix, you can begin writing Python applications that consume or create STIX content!

Note: The *python-stix* library provides **bindings** and **APIs**, both of which can be used to parse and write STIX XML files. For in-depth description of the *APIs, bindings, and the differences between the two*, please refer to APIs or bindings?

Creating a STIX Package

```
from stix.core import STIXPackage                          # Import the STIX Package API
from stix.report import Report                             # Import the STIX Report API
from stix.report.header import Header                      # Import the STIX Report Header API

stix_package = STIXPackage()                               # Create an instance of STIXPackage
stix_report = Report()                                     # Create a Report instance
stix_report.header = Header()                              # Create a header for the report
stix_report.header.description = "Getting Started!"        # Set the description
stix_package.add(stix_report)                              # Add the report to our STIX Package

print(stix_package.to_xml())                               # Print the XML for this STIX Package
```

Parsing STIX XML

```
from stix.core import STIXPackage          # Import the STIX Package API

fn = 'stix_content.xml'                    # The STIX content filename
stix_package = STIXPackage.from_xml(fn)    # Parse using the from_xml() method
```

2.2.3 Examples

The python-stix GitHub repository contains several example scripts that help illustrate the capabilities of the APIs. These examples can be found here. Accompanying walkthrough slides are available. These scripts are simple command line utilities that can be executed by passing the name of the script to a Python interpreter.

```
Example:
$ python ex_01.py
```

Note: You must install python-stix before running these example scripts.

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2.3 Overview

This page provides a quick overview needed to understand the inner workings of the **python-stix** library. If you prefer a more hands-on approach, browse the Examples.

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2.3.1 ID Namespaces

By default, **python-stix** sets the default ID namespace to `http://example.com` with an alias of `example`. This results in STIX id declarations that look like `id="example:Package-2813128d-f45e-41f7-b10a-20a5656e3785"`.

To change this, use the `mixbox.idgen.set_id_namespace()` method which takes a dictionary as a parameter.

```
from stix.core import STIXPackage
from mixbox.idgen import set_id_namespace
from mixbox.namespaces import Namespace

NAMESPACE = Namespace("http://MY-NAMESPACE.com", "myNS")
set_id_namespace(NAMESPACE) # new ids will be prefixed by "myNS"

stix_package = STIXPackage() # id will be created automatically
print stix_package.to_xml()
```

Which outputs:

```
<stix:STIX_Package
    xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
    xmlns:myNS="http://MY-NAMESPACE.com"
    xmlns:stix="http://stix.mitre.org/stix-1"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xlink="http://www.w3.org/1999/xlink"
    id="myNS:Package-b2039368-9476-4a5b-8c1d-0ef5d1b37e06" version="1.2"/>
```

Success! The `xmlns:myNS="http://MY-NAMESPACE.com"` matches our `NAMESPACE` dictionary and the `id` attribute includes the `myNS` namespace alias.

Working With CybOX

When setting the ID namespace in **python-stix**, the ID namespace will also be set in **python-cybox**.

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2.3.2 Controlled Vocabularies

Many fields in STIX leverage the `stixCommon:ControlledVocabularyStringType`, which acts as a base type for controlled vocabulary implementations. The STIX language defines a set of default controlled vocabularies which are found in the `stix_default_vocabs.xsd` XML Schema file.

The **python-stix** library contains a *`stix.common.vocabs`* module, which defines the *`VocabString`* class implementation of the schema `ControlledVocabularyStringType` as well as *`VocabString`* implementations which correspond to default controlled vocabularies.

For example, the `stix_default_vocabularies.xsd` schema defines a controlled vocabulary for STIX Package Intents: `PackageIntentVocab-1.0`. The *`stix.common.vocabs`* module contains an analogous `PackageIntent` class, which acts as a derivation of *`VocabString`*.

Each *`VocabString`* implementation contains:

- A static list of class-level term attributes, each beginning with `TERM_` (e.g., `TERM_INDICATORS`)
- A tuple containing all allowed vocabulary terms: `_ALLOWED_VALUES`, which is use for input validation. This is generated via the `vocabs.register_vocab()` class decorator.
- Methods found on `stix.Entity`, such as `to_xml()`, `to_dict()`, `from_dict()`, etc.

Interacting With VocabString Fields

The following sections define ways of interacting with VocabString fields.

Default Vocabulary Terms

The STIX Language often suggested a default controlled vocabulary type for a given controlled vocabulary field. Each controlled vocabulary contains an enumeration of allowed terms.

Each *`VocabString`* implementation found in the *`stix.common.vocabs`* module contains static class-level attributes for each vocabulary term. When setting controlled vocabulary field values, it is recommended that users take advantage of these class-level attributes.

The following demonstrates setting the `Package_Intent` field with a default vocabulary term. Note that the `STIXHeader.package_intents` property returns a list. As such, we use the `append()` method to add terms. Other STIX controlled vocabulary fields may only allow one value rather than a list of values.

```
from stix.core import STIXHeader
from stix.common.vocabs import PackageIntent

header = STIXHeader()
header.package_intents.append(PackageIntent.TERM_INDICATORS)

print(header.to_xml())
```

Which outputs:

```
<stix:STIXHeaderType>
    <stix:Package_Intent xsi:type="stixVocabs:PackageIntentVocab-1.0">Indicators</stix:Package_Intent
</stix:STIXHeaderType>
```

Non-Default Vocabulary Terms

Though it is suggested, STIX content authors are not required to use the default controlled vocabulary for a given field. As such, **python-stix** allows users to pass in non-default values for controlled vocabulary fields.

To set a controlled vocabulary to a non-default vocabulary term, pass a *VocabString* instance into a controlled vocabulary field.

A raw *VocabString* field will contain no `xsi:type` information or `_ALLOWED_VALUES` members, which removes the input and schema validation requirements.

```
from stix.core import STIXHeader
from stix.common.vocabs import VocabString, PackageIntent

header = STIXHeader()
non_default_term = VocabString("NON-DEFAULT VOCABULARY TERM")
header.package_intents.append(non_default_term)

print(header.to_xml())
```

Which outputs:

```
<stix:STIXHeaderType>
    <stix:Package_Intent>NON-DEFAULT VOCABULARY TERM</stix:Package_Intent>
</stix:STIXHeaderType>
```

Notice that the `<stix:Package_Intent>` field does not have an `xsi:type` attribute. As such, this field can contain any string value and is not bound by a controlled vocabulary enumeration of terms.

Working With Custom Controlled Vocabularies

STIX allows content authors and developers to extend the `ControlledVocabularyStringType` schema type for the definition of new controlled vocabularies. The **python-stix** library allows developers to create and register Python types which mirror the custom XML Schema vocabulary types.

XSD Example The following XML Schema example shows the definition of a a new custom controlled vocabulary schema type. Instances of this schema type could be used wherever a `ControlledVocabularyStringType` instance is expected (e.g., the `STIX_Header/Package_Intent` field).

```
Filename: customVocabs.xsd

<xs:schema
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:customVocabs="http://customvocabs.com/vocabs-1"
    xmlns:stixVocabs="http://stix.mitre.org/default_vocabularies-1"
    xmlns:stixCommon="http://stix.mitre.org/common-1"
    targetNamespace="http://customvocabs.com/vocabs-1"
    elementFormDefault="qualified"
    version="1.2"
    xml:lang="English">
    <xs:import namespace="http://stix.mitre.org/common-1" schemaLocation="http://stix.mitre.org/XMLSc
    <xs:complexType name="CustomVocab-1.0">
        <xs:simpleContent>
            <xs:restriction base="stixCommon:ControlledVocabularyStringType">
                <xs:simpleType>
                    <xs:union memberTypes="customVocabs:CustomEnum-1.0"/>
                </xs:simpleType>
```

```
                <xs:attribute name="vocab_name" type="xs:string" use="optional" fixed="Test Vocab"/>
                <xs:attribute name="vocab_reference" type="xs:anyURI" use="optional" fixed="http://ex
            </xs:restriction>
        </xs:simpleContent>
    </xs:complexType>
    <xs:simpleType name="CustomEnum-1.0">
        <xs:restriction base="xs:string">
            <xs:enumeration value="FOO"/>
            <xs:enumeration value="BAR"/>
        </xs:restriction>
    </xs:simpleType>
</xs:schema>
```

XML Instance Sample The following STIX XML instance document shows a potential use of this field. Note the `xsi:type=customVocabs:CustomVocab-1.0` on the `Package_Intent` field.

```
Filename: customVocabs.xml

<stix:STIX_Package
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:stixExample="http://stix.mitre.org/example"
    xmlns:stix="http://stix.mitre.org/stix-1"
    xmlns:customVocabs="http://customvocabs.com/vocabs-1"
    xsi:schemaLocation="
    http://stix.mitre.org/stix-1 /path/to/stix_core.xsd
    http://customvocabs.com/vocabs-1 /path/to/customVocabs.xsd"
    id="stixExample:STIXPackage-33fe3b22-0201-47cf-85d0-97c02164528d"
    version="1.2">
    <stix:STIX_Header>
        <stix:Package_Intent xsi:type="customVocabs:CustomVocab-1.0">FOO</stix:Package_Intent>
    </stix:STIX_Header>
</stix:STIX_Package>
```

Python Code To parse content which uses custom controlled vocabularies, Python developers don't have to do anything special–you just call *`STIXPackage.from_xml()`* on the input and all the namespaces, `xsi:types`, etc. are attached to each instance of *`VocabString`*. When serializing the document, the input namespaces and `xsi:type` attributes are retained!

However, to *create* new content which utilizes a schema defined and enforced custom controlled vocabulary, developers must create a *`VocabString`* implementation which mirrors the schema definition.

For our `CustomVocab-1.0` schema type, the Python would look like this:

```
from stix.common import vocabs

# Create a custom vocabulary type
@vocabs.register_vocab
class CustomVocab(vocabs.VocabString):
    _namespace = 'http://customvocabs.com/vocabs-1'
    _XSI_TYPE = 'customVocabs:CustomVocab-1.0'

    # Valid terms
    TERM_FOO = 'FOO'
    TERM_BAR = 'BAR'
```

As you can see, we can express a lot of the same information found in the XML Schema definition, but in Python!

- `_namespace`: The `targetNamespace` for our custom vocabulary
- `_XSI_TYPE`: The `xsi:type` attribute value to write out for instances of this vocabulary.
- `TERM_FOO|BAR`: Allowable terms for the vocabulary. These terms are collected for input validation.

Note: The `@register_vocab` class decorator registers the class and its `xsi:type` as a *VocabString* implementation so **python-stix** will know to build instances of `CustomVocab` when parsed content contains `CustomVocab-1.0` content.

This also inspects the class attributes for any that begin with `TERM_` and collects their values for the purpose of input validation.

Warning: Before **python-stix** 1.2.0.0, users registered custom *VocabString* implementations via the *stix.common.vocabs.add_vocab()* method. This method still exists but is considered **DEPRECATED** in favor of the *stix.common.vocabs.register_vocab()* class decorator.

```
# builtin
from StringIO import StringIO

# python-stix modules
from stix.core import STIXPackage
from stix.common.vocabs import VocabString, register_vocab
from mixbox.namespaces import register_namespace, Namespace

XML = \
"""
<stix:STIX_Package
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:stix="http://stix.mitre.org/stix-1"
    xmlns:customVocabs="http://customvocabs.com/vocabs-1"
    xmlns:example="http://example.com/"
    xsi:schemaLocation="
    http://stix.mitre.org/stix-1 /path/to/stix_core.xsd
    http://customvocabs.com/vocabs-1 /path/to/customVocabs.xsd"
    id="example:STIXPackage-33fe3b22-0201-47cf-85d0-97c02164528d"
    version="1.2">
    <stix:STIX_Header>
        <stix:Package_Intent xsi:type="customVocabs:CustomVocab-1.0">FOO</stix:Package_Intent>
    </stix:STIX_Header>
</stix:STIX_Package>
"""

# Create a VocabString class for our CustomVocab-1.0 vocabulary which
@register_vocab
class CustomVocab(VocabString):
    _namespace = 'http://customvocabs.com/vocabs-1'
    _XSI_TYPE  = 'customVocabs:CustomVocab-1.0'
    TERM_FOO   = 'FOO'
    TERM_BAR   = 'BAR'
register_namespace(Namespace(CustomVocab._namespace, "customVocabNS"))

# Parse the input document
sio = StringIO(XML)
package = STIXPackage.from_xml(sio)

# Retrieve the first (and only) Package_Intent entry
```

```
package_intent = package.stix_header.package_intents[0]

# Print information about the input Package_Intent
print('%s %s %s' % (type(package_intent), package_intent.xsi_type, package_intent))

# Add another Package Intent
bar = CustomVocab('BAR')
package.stix_header.add_package_intent(bar)

# This will include the 'BAR' CustomVocab entry
print(package.to_xml())
```

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2.4 Examples

This page includes some basic examples of creating and parsing STIX content.

There are a couple things we do in these examples for purposes of demonstration that shouldn't be done in production code:

- In some examples, we use `set_id_method(IDGenerator.METHOD_INT)` to make IDs for STIX constructs easier to read and cross-reference within the XML document. In production code, you should omit this statement, which causes random UUIDs to be created instead, or create explicit IDs yourself for STIX constructs.

See the STIX Idioms documentation for more great examples of how to use **python-stix**.

2.4.1 Creating a STIX Package

```
from stix.core import STIXPackage
from stix.report import Report
from stix.report.header import Header
from stix.utils import IDGenerator, set_id_method

set_id_method(IDGenerator.METHOD_INT) # For testing and demonstration only!

stix_package = STIXPackage()
stix_report = Report()
stix_report.header = Header()
stix_report.header.description = "Getting Started!"
stix_package.add(stix_report)

print(stix_package.to_xml())
```

Which outputs:

```
<stix:STIX_Package
        xmlns:cybox="http://cybox.mitre.org/cybox-2"
        xmlns:cyboxCommon="http://cybox.mitre.org/common-2"
        xmlns:cyboxVocabs="http://cybox.mitre.org/default_vocabularies-2"
        xmlns:example="http://example.com"
        xmlns:report="http://stix.mitre.org/Report-1"
        xmlns:stix="http://stix.mitre.org/stix-1"
        xmlns:stixCommon="http://stix.mitre.org/common-1"
        xmlns:stixVocabs="http://stix.mitre.org/default_vocabularies-1"
```

```
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" id="example:Package-1" version="1.2">
    <stix:Reports>
        <stix:Report timestamp="2016-07-15T15:27:43.847000+00:00" id="example:Report-2" xsi:type='rep
            <report:Header>
                <report:Description>Getting Started!</report:Description>
            </report:Header>
        </stix:Report>
    </stix:Reports>
</stix:STIX_Package>
```

2.4.2 Controlled Vocabularies: VocabString

This section has moved! Head over to Controlled Vocabularies for the documentation.

2.4.3 ID Namespaces

This section has moved! Head over to ID Namespaces for the documentation.

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2.5 APIs or bindings?

This page describes both the **APIs** and the **bindings** provided by the *python-stix* library.

2.5.1 Overview

The python-stix library provides APIs and utilities that aid in the creation, consumption, and processing of Structured Threat Information eXpression (STIX) content. The APIs that drive much of the functionality of python-stix sit on top of a binding layer that acts as a direct connection between Python and the STIX XML. Because both the APIs and the bindings allow for the creation and development of STIX content, developers that are new to python-stix may not understand the differences between the two. This document aims to identify the purpose and uses of the APIs and bindings.

2.5.2 Bindings

The python-stix library leverages machine generated XML-to-Python bindings for the creation and processing of STIX content. These bindings are created using the generateDS utility and can be found under stix.bindings within the package hierarchy.

The STIX bindings allow for a direct, complete mapping between Python classes and STIX XML Schema data structures. That being said, it is possible (though not advised) to use only the STIX bindings to create STIX documents. However, because the code is generated from XML Schema without contextual knowledge of relationships or broader organizational/developmental schemes, it is often a cumbersome and laborious task to create even the simplest of STIX documents.

Developers within the python-stix team felt that the binding code did not lend itself to rapid development or natural navigation of data, and so it was decided that a higher-level API should be created.

2.5.3 APIs

The python-stix APIs are classes and utilities that leverage the STIX bindings for the creation and processing of STIX content. The APIs are designed to behave more naturally when working with STIX content, allowing developers to conceptualize and interact with STIX documents as pure Python objects and not XML Schema objects.

The APIs provide validation of inputs, multiple input and output formats, more Pythonic access of data structure internals and interaction with classes, and better interpretation of a developers intent through datatype coercion and implicit instantiation.

Note: The python-stix APIs are under constant development. Our goal is to provide full API coverage of the STIX data structures, but not all structures are exposed via the APIs yet. Please refer to the API Reference for API coverage details.

2.5.4 Brevity Wins

The two code examples show the difference in creating and printing a simple STIX document consisting of only a STIX Package and a STIX Header with a description and produced time using the python-stix and python-cybox bindings. Both examples will produce the same STIX XML!

API Example

```
from datetime import datetime
from stix.core import STIXPackage, STIXHeader
from stix.common import InformationSource
from cybox.common import Time

# Create the STIX Package and STIX Header objects
stix_package = STIXPackage()
stix_header = STIXHeader()

# Set the description
stix_header.description = 'APIs vs. Bindings Wiki Example'

# Set the produced time to now
stix_header.information_source = InformationSource()
stix_header.information_source.time = Time()
stix_header.information_source.time.produced_time = datetime.now()

# Build document
stix_package.stix_header = stix_header

# Print the document to stdout
print(stix_package.to_xml())
```

Binding Example

```
import sys
from datetime import datetime

import stix.bindings.stix_core as stix_core_binding
import stix.bindings.stix_common as stix_common_binding
import cybox.bindings.cybox_common as cybox_common_binding

# Create the STIX Package and STIX Header objects
stix_package = stix_core_binding.STIXType()
```

```
stix_header = stix_core_binding.STIXHeaderType()

# Set the description
stix_header_description = stix_common_binding.StructuredTextType()
stix_header_description.set_valueOf_('APIs vs. Bindings Wiki Example')

# Set the produced time to now
stix_header_time = cybox_common_binding.TimeType()
stix_header_time.set_Produced_Time(datetime.now())

# Bind the time to the STIX Header's Information Source element
stix_header_info_source = stix_common_binding.InformationSourceType()
stix_header_info_source.set_Time(stix_header_time)

# Build the document
stix_header.set_Description(stix_header_description)
stix_header.set_Information_Source(stix_header_info_source)
stix_package.set_STIX_Header(stix_header)

# Print the document to stdout
stix_package.export(sys.stdout, 0, stix_core_binding.DEFAULT_XML_NS_MAP)
```

2.5.5 Feedback

If there is a problem with the APIs or bindings, or if there is functionality missing from the APIs that forces the use of the bindings, let us know in the python-stix issue tracker

CHAPTER 3

API Reference

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3.1 API Reference

The *python-stix* APIs are the recommended tools for reading, writing, and manipulating STIX XML documents.

Note: The python-stix APIs are currently under development. As such, API coverage of STIX data constructs is incomplete; please bear with us as we work toward complete coverage. This documentation also serves to outline current API coverage.

3.1.1 STIX

Modules located in the base stix package

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`stix.base` Module

Classes

class `stix.base.`**`Entity`**

Base class for all classes in the STIX API.

`find`(*id_*)

Searches the children of a *`Entity`* implementation for an object with an `id_` property that matches *id_*.

`to_xml`(*include_namespaces=True*, *include_schemalocs=False*, *ns_dict=None*, *schemaloc_dict=None*, *pretty=True*, *auto_namespace=True*, *encoding='utf-8'*)

Serializes a *`Entity`* instance to an XML string.

The default character encoding is `utf-8` and can be set via the *encoding* parameter. If *encoding* is `None`, a string (unicode in Python 2, str in Python 3) is returned.

Parameters

- **`auto_namespace`** – Automatically discover and export XML namespaces for a STIX *`Entity`* instance.

- **include_namespaces** – Export namespace definitions in the output XML. Default is `True`.
- **include_schemalocs** – Export `xsi:schemaLocation` attribute in the output document. This will attempt to associate namespaces declared in the STIX document with schema locations. If a namespace cannot be resolved to a schemaLocation, a Python warning will be raised. Schemalocations will only be exported if *include_namespaces* is also `True`.
- **ns_dict** – Dictionary of XML definitions (namespace is key, alias is value) to include in the exported document. This must be passed in if *auto_namespace* is `False`.
- **schemaloc_dict** – Dictionary of XML `namespace: schema location` mappings to include in the exported document. These will only be included if *auto_namespace* is `False`.
- **pretty** – Pretty-print the XML.
- **encoding** – The output character encoding. Default is `utf-8`. If *encoding* is set to `None`, a string (unicode in Python 2, str in Python 3) is returned.

Returns An XML string for this *Entity* instance. Default character encoding is `utf-8`.

class `stix.base.`**EntityList**(**args*)
Bases: `mixbox.entities.EntityList`, *stix.base.Entity*

Version: 1.2.0.11

stix.data_marking Module

Classes

class `stix.data_marking.`**Marking**(*markings=None*)
Bases: *stix.base.EntityList*

class `stix.data_marking.`**MarkingSpecification**(*controlled_structure=None*, *marking_structures=None*)
Bases: *stix.base.Entity*

class `stix.data_marking.`**MarkingStructure**
Bases: *stix.base.Entity*

Functions

`stix.data_marking.`**add_extension**(*cls*)
Registers a stix.Entity class as an implementation of an xml type.

Classes must have an `_XSI_TYPE` class attributes to be registered. The value of this attribute must be a valid xsi:type.

Note: This was designed for internal use.

3.1.2 STIX Campaign

Modules located in the stix.campaign package

Version: 1.2.0.11

stix.campaign Module

Overview

The *stix.campaign* module implements *Campaign*.

Campaigns are instances of ThreatActors pursuing an intent, as observed through sets of Incidents and/or TTP, potentially across organizations.

Documentation Resources

- Campaign Data Model

Classes

class stix.campaign.**Campaign**(*id_=None*, *idref=None*, *timestamp=None*, *title=None*, *description=None*, *short_description=None*)

Bases: stix.base.BaseCoreComponent

Implementation of the STIX Campaign.

Parameters

- **id** (*optional*) – An identifier. If None, a value will be generated via mixbox.idgen.create_id(). If set, this will unset the idref property.
- **idref** (*optional*) – An identifier reference. If set this will unset the id_ property.
- **timestamp** (*optional*) – A timestamp value. Can be an instance of datetime.datetime or str.
- **description** – A description of the purpose or intent of this object.
- **short_description** – A short description of the intent or purpose of this object.
- **title** – The title of this object.

add_activity(*value*)

Adds an *Activity* object to the activity collection.

add_description(*description*)

Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)

Adds a description to the short_descriptions collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description

A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

find(*id_*)
Searches the children of a `Entity` implementation for an object with an `id_` property that matches *id_*.

short_description
A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

to_dict()
Convert to a `dict`

Subclasses can override this function.

Returns Python dict with keys set from this Entity.

to_json()
Export an object as a JSON String.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's `_binding_class` with properties set from this Entity.

class stix.campaign.**AssociatedCampaigns**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class stix.campaign.**Attribution**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class stix.campaign.**Names**(**args*)
Bases: *stix.base.EntityList*

class stix.campaign.**RelatedIncidents**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class stix.campaign.**RelatedIndicators**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class stix.campaign.**RelatedTTPs**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

3.1.3 STIX Common

Modules located in the stix.common package

Version: 1.2.0.11

stix.common Module

Classes

class stix.common.**EncodedCDATA**(*value=None*, *encoded=None*)
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.common.activity Module

Classes

class stix.common.activity.**Activity**
Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.common.confidence Module

Classes

class stix.common.confidence.**Confidence**(*value=None*, *timestamp=None*, *description=None*, *source=None*)
Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.common.datetimewithprecision Module

Classes

class stix.common.datetimewithprecision.**DateTimeWithPrecision**(*value=None*, *precision='second'*)

Bases: *stix.base.Entity*

Constants

stix.common.datetimewithprecision.**DATE_PRECISION_VALUES** = **('year', 'month', 'day')**

tuple() -> empty tuple tuple(iterable) -> tuple initialized from iterable's items

If the argument is a tuple, the return value is the same object.

stix.common.datetimewithprecision.**TIME_PRECISION_VALUES** = **('hour', 'minute', 'second')**

tuple() -> empty tuple tuple(iterable) -> tuple initialized from iterable's items

If the argument is a tuple, the return value is the same object.

stix.common.datetimewithprecision.**DATETIME_PRECISION_VALUES** = **('year', 'month', 'day', 'hour', 'minute', '**

tuple() -> empty tuple tuple(iterable) -> tuple initialized from iterable's items

If the argument is a tuple, the return value is the same object.

Version: 1.2.0.11

stix.common.identity Module

Classes

class stix.common.identity.**Identity**(*id_=None*, *idref=None*, *name=None*, *related_identities=None*)

Bases: *stix.base.Entity*

class stix.common.identity.**RelatedIdentities**(**args*)

Bases: *stix.base.EntityList*

Functions

stix.common.identity.**add_extension**(*cls*)

Registers a stix.Entity class as an implementation of an xml type.

Classes must have an `_XSI_TYPE` class attributes to be registered. The value of this attribute must be a valid xsi:type.

Note: This was designed for internal use.

Version: 1.2.0.11

stix.common.information_source Module

Classes

class stix.common.information_source.**InformationSource**(*description=None*, *identity=None*, *time=None*, *tools=None*, *contributing_sources=None*, *references=None*)

Bases: *stix.base.Entity*

add_description(*description*)

Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

description

A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

class stix.common.information_source.**ContributingSources**(**args*)

Bases: *stix.base.EntityList*

Version: 1.2.0.11

stix.common.kill_chains Module

Classes

class stix.common.kill_chains.**KillChain**(*id_=None*, *name=None*, *definer=None*, *reference=None*)

Bases: *stix.base.Entity*

class stix.common.kill_chains.**KillChains**(**args*)

Bases: *stix.base.EntityList*

class stix.common.kill_chains.**KillChainPhase**(*phase_id=None*, *name=None*, *ordinality=None*)

Bases: *stix.base.Entity*

class stix.common.kill_chains.**KillChainPhaseReference**(*phase_id=None*, *name=None*, *ordinality=None*, *kill_chain_id=None*, *kill_chain_name=None*)

Bases: *stix.common.kill_chains.KillChainPhase*

class stix.common.kill_chains.**KillChainPhasesReference**(**args*)

Bases: *stix.base.EntityList*

Lockheed Martin Kill Chain

There is a shortcuts for adding kill chain phases from the Lockheed Martin Cyber Kill Chain to indicators:

```
from stix.common.kill_chains.lmco import PHASE_RECONNAISSANCE
from stix.indicator import Indicator
i = Indicator()
i.add_kill_chain_phase(PHASE_RECONNAISSANCE)
print i.to_xml(include_namespaces=False)
```

```
<indicator:Indicator id="example:indicator-2bb1c0ea-7dd8-40fb-af64-7199f00719c1"
        timestamp="2015-03-17T19:14:22.797675+00:00" xsi:type='indicator:IndicatorType'>
    <indicator:Kill_Chain_Phases>
        <stixCommon:Kill_Chain_Phase phase_id="stix:TTP-af1016d6-a744-4ed7-ac91-00fe2272185a"/>
    </indicator:Kill_Chain_Phases>
</indicator:Indicator>
```

Version: 1.2.0.11

stix.common.related Module

Classes

class stix.common.related.**GenericRelationship**(*confidence=None*, *information_source=None*, *relationship=None*)

Bases: *stix.base.Entity*

class stix.common.related.**GenericRelationshipList**(*scope=None*, **args*)

Bases: *stix.base.EntityList*

Base class for concrete GenericRelationshipList types.

Note: Subclasses must supply exactly one multiple TypedField.

---

class stix.common.related.**RelatedPackageRef**(*idref=None*, *timestamp=None*, *confidence=None*, *information_source=None*, *relationship=None*)

Bases: *stix.common.related.GenericRelationship*

class stix.common.related.**RelatedPackageRefs**(**args*)

Bases: *stix.base.EntityList*

class stix.common.related.**_BaseRelated**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)

Bases: *stix.common.related.GenericRelationship*

A base class for related types.

This class is not a real STIX type and should not be directly instantiated.

Note: Subclasses must supply a TypedField named *item*!

---

class stix.common.related.**RelatedCampaign**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)

Bases: *stix.common.related._BaseRelated*

class stix.common.related.**RelatedCOA**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)
Bases: *stix.common.related._BaseRelated*

class stix.common.related.**RelatedExploitTarget**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)
Bases: *stix.common.related._BaseRelated*

class stix.common.related.**RelatedIdentity**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)
Bases: *stix.common.related._BaseRelated*

class stix.common.related.**RelatedIncident**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)
Bases: *stix.common.related._BaseRelated*

class stix.common.related.**RelatedIndicator**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)
Bases: *stix.common.related._BaseRelated*

class stix.common.related.**RelatedObservable**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)
Bases: *stix.common.related._BaseRelated*

class stix.common.related.**RelatedThreatActor**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)
Bases: *stix.common.related._BaseRelated*

class stix.common.related.**RelatedTTP**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)
Bases: *stix.common.related._BaseRelated*

class stix.common.related.**RelatedReports**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class stix.common.related.**RelatedReport**(*item=None*, *confidence=None*, *information_source=None*, *relationship=None*)
Bases: *stix.common.related._BaseRelated*

Version: 1.2.0.11

stix.common.statement Module

Classes

class stix.common.statement.**Statement**(*value=None*, *timestamp=None*, *description=None*, *source=None*)
Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.common.structured_text Module

Classes

class stix.common.structured_text.**StructuredText**(*value=None*, *ordinality=None*)
Bases: *stix.base.Entity*

Used for storing descriptive text elements.

id_
An id for the text element, typically used for controlled structure xpath selectors.

value
The text value of this object.

structuring_format
The format of the text. For example, `html5`.

__str__()
Returns a UTF-8 encoded string representation of the `value`.

__unicode__()
Returns a `unicode` string representation of the `value`.

to_dict()
Converts this object into a dictionary representation.

Note: If no properies or attributes are set other than `value`, this will return a string.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's `_binding_class` with properties set from this Entity.

class stix.common.structured_text.**StructuredTextList**(**args*)
Bases: `stix.base.TypedCollection`, `_abcoll.Sequence`

A sequence type used to store StructureText objects.

Parameters ***args** – A variable-length argument list which can contain single *StructuredText* objects or sequences of objects.

__delitem__(*key*)
Removes the item with a given ordinality.

Parameters **key** – An ordinality value.

Raises `KeyError` – If the *key* does not match the ordinality for any object in the collection.

__getitem__(*key*)
Returns the *StructuredText* object with a matching ordinality.

Parameters **key** – An ordinality value.

Raises KeyError – If *key* does not match the ordinality of any *StructuredText* object.

__iter__()
Returns an iterator for the collection sorted by ordinality.

add(*value*)
Adds the *StructuredText* *value* to the collection.

If *value* is not a *StructuredText* object, an attempt will be made to convert it to one.

Note: If *value* does not have an `ordinality` set, one will be assigned. If *value* has an ordinality which matches one already in the collection, *value* will replace the existing item.

Parameters **value** – A *StructuredText* object.

insert(*value*)
Inserts *value* into the collection.

If *value* has an ordinality which conflicts with an existing value, the existing value (and any contiguous values) will have their ordinality values incremented by one.

next_ordinality
Returns the "+1" of the highest ordinality in the collection.

remove(*value*)
Removes the value from the collection.

reset()
Assigns sequential ordinality values to each of the sorted *StructuredText* objects, starting with `1` and ending at `len(self)`.

sorted
Returns a copy of the collection of internal *StructuredText* objects, sorted by their `ordinality`.

to_dict()
Returns a list of dictionary representations of the contained objects.

An attempt is made to flatten out the returned list when there is only one item in the collection. This is to support backwards compatibility with previous versions of python-stix.

- If the list repr has more than one item, return the list.
- If there is only one item, inspect it.
  - If the item is not a dictionary, return it.
  - If its `ordinality` key has a corresponding value of `1`, remove it from the dictionary since it's assumed if there is only one item.
  - After removing `ordinality`, if the only key left is `value`, just return the value of `value` (a string).

to_obj(*ns_info=None*)
Returns a binding object list for the StructuredTextList.

If the list has a length of 1, and its member has an ordinality of 1, the ordinality will be unset.

update(*iterable*)
Adds each item of *iterable* to the collection.

Note: Any existing objects with conflicting ordinality values will be overwritten.

Parameters **iterable** – An iterable collection of *StructuredText* objects to add to this collection.

Version: 1.2.0.11

stix.common.tools Module

Classes

class stix.common.tools.**ToolInformation**(*title=None*, *short_description=None*, *tool_name=None*, *tool_vendor=None*)
Bases: *stix.base.Entity*, cybox.common.tools.ToolInformation

add_short_description(*description*)
Adds a description to the short_descriptions collection.

This is the same as calling "foo.short_descriptions.add(bar)".

short_description
A single short description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one short description set, this will return the short description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.common.vocabs Module

Classes

class stix.common.vocabs.**AssetType_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ACCESS_READER = 'Access reader'

TERM_ADMINISTRATOR = 'Administrator'

TERM_ATM = 'ATM'

TERM_AUDITOR = 'Auditor'

TERM_AUTH_TOKEN = 'Auth token'

TERM_BACKUP = 'Backup'

TERM_BROADBAND = 'Broadband'

TERM_CALL_CENTER = 'Call center'

TERM_CAMERA = 'Camera'

TERM_CASHIER = 'Cashier'

TERM_CUSTOMER = 'Customer'

TERM_DATABASE = 'Database'

TERM_DCS = 'DCS'

TERM_DESKTOP = 'Desktop'

TERM_DEVELOPER = 'Developer'

TERM_DHCP = 'DHCP'

TERM_DIRECTORY = 'Directory'

TERM_DISK_DRIVE = 'Disk drive'

TERM_DISK_MEDIA = 'Disk media'

TERM_DNS = 'DNS'

TERM_DOCUMENTS = 'Documents'

TERM_ENDUSER = 'End-user'

TERM_EXECUTIVE = 'Executive'

TERM_FILE = 'File'

TERM_FINANCE = 'Finance'

TERM_FIREWALL = 'Firewall'

TERM_FLASH_DRIVE = 'Flash drive'

TERM_FORMER_EMPLOYEE = 'Former employee'

TERM_GAS_TERMINAL = 'Gas terminal'

TERM_GUARD = 'Guard'

TERM_HELPDESK = 'Helpdesk'

TERM_HSM = 'HSM'

TERM_HUMAN_RESOURCES = 'Human resources'

TERM_IDS = 'IDS'

TERM_KIOSK = 'Kiosk'

TERM_LAN = 'LAN'

TERM_LAPTOP = 'Laptop'

TERM_LOG = 'Log'

TERM_MAIL = 'Mail'

TERM_MAINFRAME = 'Mainframe'

TERM_MAINTENANCE = 'Maintenance'

TERM_MANAGER = 'Manager'

TERM_MEDIA = 'Media'

TERM_MOBILE_PHONE = 'Mobile phone'

TERM_NETWORK = 'Network'

TERM_PARTNER = 'Partner'

TERM_PAYMENT_CARD = 'Payment card'

TERM_PAYMENT_SWITCH = 'Payment switch'

TERM_PBX = 'PBX'

TERM_PED_PAD = 'PED pad'

TERM_PERIPHERAL = 'Peripheral'

TERM_PERSON = 'Person'

TERM_PLC = 'PLC'

TERM_POS_CONTROLLER = 'POS controller'

TERM_POS_TERMINAL = 'POS terminal'

TERM_PRINT = 'Print'

TERM_PRIVATE_WAN = 'Private WAN'

TERM_PROXY = 'Proxy'

TERM_PUBLIC_WAN = 'Public WAN'

TERM_REMOTE_ACCESS = 'Remote access'

TERM_ROUTER_OR_SWITCH = 'Router or switch'

TERM_RTU = 'RTU'

TERM_SAN = 'SAN'

TERM_SCADA = 'SCADA'

TERM_SERVER = 'Server'

TERM_SMART_CARD = 'Smart card'

TERM_TABLET = 'Tablet'

TERM_TAPES = 'Tapes'

TERM_TELEPHONE = 'Telephone'

TERM_UNKNOWN = 'Unknown'

TERM_USER_DEVICE = 'User Device'

TERM_VOIP_ADAPTER = 'VoIP adapter'

TERM_VOIP_PHONE = 'VoIP phone'

TERM_WEB_APPLICATION = 'Web application'

TERM_WLAN = 'WLAN'

class stix.common.vocabs.**AttackerInfrastructureType_1_0**(*value=None*)

Bases: *stix.common.vocabs.VocabString*

TERM_ANONYMIZATION = 'Anonymization'

TERM_ANONYMIZATION_PROXY = 'Anonymization - Proxy'

TERM_ANONYMIZATION_TOR_NETWORK = 'Anonymization - TOR Network'

TERM_ANONYMIZATION_VPN = 'Anonymization - VPN'

TERM_COMMUNICATIONS = 'Communications'

TERM_COMMUNICATIONS_BLOGS = 'Communications - Blogs'

TERM_COMMUNICATIONS_FORUMS = 'Communications - Forums'

TERM_COMMUNICATIONS_INTERNET_RELAY_CHAT = 'Communications - Internet Relay Chat'

TERM_COMMUNICATIONS_MICROBLOGS = 'Communications - Micro-Blogs'

TERM_COMMUNICATIONS_MOBILE_COMMUNICATIONS = 'Communications - Mobile Communications'

TERM_COMMUNICATIONS_SOCIAL_NETWORKS = 'Communications - Social Networks'

TERM_COMMUNICATIONS_USERGENERATED_CONTENT_WEBSITES = 'Communications - User-Generated Content We

TERM_DOMAIN_REGISTRATION = 'Domain Registration'

TERM_DOMAIN_REGISTRATION_DYNAMIC_DNS_SERVICES = 'Domain Registration - Dynamic DNS Services'

TERM_DOMAIN_REGISTRATION_LEGITIMATE_DOMAIN_REGISTRATION_SERVICES = 'Domain Registration - Legit

TERM_DOMAIN_REGISTRATION_MALICIOUS_DOMAIN_REGISTRARS = 'Domain Registration - Malicious Domain Re

TERM_DOMAIN_REGISTRATION_TOPLEVEL_DOMAIN_REGISTRARS = 'Domain Registration - Top-Level Domain Regi

TERM_ELECTRONIC_PAYMENT_METHODS = 'Electronic Payment Methods'

TERM_HOSTING = 'Hosting'

TERM_HOSTING_BULLETPROOF_OR_ROGUE_HOSTING = 'Hosting - Bulletproof / Rogue Hosting'

TERM_HOSTING_CLOUD_HOSTING = 'Hosting - Cloud Hosting'

TERM_HOSTING_COMPROMISED_SERVER = 'Hosting - Compromised Server'

TERM_HOSTING_FAST_FLUX_BOTNET_HOSTING = 'Hosting - Fast Flux Botnet Hosting'

TERM_HOSTING_LEGITIMATE_HOSTING = 'Hosting - Legitimate Hosting'

class stix.common.vocabs.**AttackerToolType_1_0**(*value=None*)
Bases: cybox.common.vocabs.VocabString

TERM_APPLICATION_SCANNER = 'Application Scanner'

TERM_MALWARE = 'Malware'

TERM_PASSWORD_CRACKING = 'Password Cracking'

TERM_PENETRATION_TESTING = 'Penetration Testing'

TERM_PORT_SCANNER = 'Port Scanner'

TERM_TRAFFIC_SCANNER = 'Traffic Scanner'

TERM_VULNERABILITY_SCANNER = 'Vulnerability Scanner'

class stix.common.vocabs.**AvailabilityLossType_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ACCELERATION = 'Acceleration'

TERM_DEGREDATION = 'Degredation'

TERM_DESTRUCTION = 'Destruction'

TERM_INTERRUPTION = 'Interruption'

TERM_LOSS = 'Loss'

TERM_OBSCURATION = 'Obscuration'

TERM_UNKNOWN = 'Unknown'

class stix.common.vocabs.**AvailabilityLossType_1_1_1**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ACCELERATION = 'Acceleration'

TERM_DEGRADATION = 'Degradation'

TERM_DESTRUCTION = 'Destruction'

TERM_INTERRUPTION = 'Interruption'

TERM_LOSS = 'Loss'

TERM_OBSCURATION = 'Obscuration'

TERM_UNKNOWN = 'Unknown'

class stix.common.vocabs.**COAStage_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_REMEDY = 'Remedy'

TERM_RESPONSE = 'Response'

class stix.common.vocabs.**CampaignStatus_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_FUTURE = 'Future'

TERM_HISTORIC = 'Historic'

TERM_ONGOING = 'Ongoing'

class stix.common.vocabs.**CourseOfActionType_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_DIPLOMATIC_ACTIONS = 'Diplomatic Actions'

TERM_ERADICATION = 'Eradication'

TERM_HARDENING = 'Hardening'

TERM_INTERNAL_BLOCKING = 'Internal Blocking'

TERM_LOGICAL_ACCESS_RESTRICTIONS = 'Logical Access Restrictions'

TERM_MONITORING = 'Monitoring'

TERM_OTHER = 'Other'

TERM_PATCHING = 'Patching'

TERM_PERIMETER_BLOCKING = 'Perimeter Blocking'

TERM_PHYSICAL_ACCESS_RESTRICTIONS = 'Physical Access Restrictions'

TERM_POLICY_ACTIONS = 'Policy Actions'

TERM_PUBLIC_DISCLOSURE = 'Public Disclosure'

TERM_REBUILDING = 'Rebuilding'

TERM_REDIRECTION = 'Redirection'

TERM_REDIRECTION_HONEY_POT = 'Redirection (Honey Pot)'

TERM_TRAINING = 'Training'

class stix.common.vocabs.**DiscoveryMethod_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_AGENT_DISCLOSURE = 'Agent Disclosure'

TERM_ANTIVIRUS = 'Antivirus'

TERM_AUDIT = 'Audit'

TERM_CUSTOMER = 'Customer'

TERM_FINANCIAL_AUDIT = 'Financial Audit'

TERM_FRAUD_DETECTION = 'Fraud Detection'

TERM_HIPS = 'HIPS'

TERM_INCIDENT_RESPONSE = 'Incident Response'

TERM_IT_AUDIT = 'IT Audit'

TERM_LAW_ENFORCEMENT = 'Law Enforcement'

TERM_LOG_REVIEW = 'Log Review'

TERM_MONITORING_SERVICE = 'Monitoring Service'

TERM_NIDS = 'NIDS'

TERM_SECURITY_ALARM = 'Security Alarm'

TERM_UNKNOWN = 'Unknown'

TERM_UNRELATED_PARTY = 'Unrelated Party'

TERM_USER = 'User'

class stix.common.vocabs.**DiscoveryMethod_2_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_AGENT_DISCLOSURE = 'Agent Disclosure'

TERM_ANTIVIRUS = 'Antivirus'

TERM_AUDIT = 'Audit'

TERM_CUSTOMER = 'Customer'

TERM_EXTERNAL_FRAUD_DETECTION = 'External - Fraud Detection'

TERM_FINANCIAL_AUDIT = 'Financial Audit'

TERM_HIPS = 'HIPS'

TERM_INCIDENT_RESPONSE = 'Incident Response'

TERM_INTERNAL_FRAUD_DETECTION = 'Internal - Fraud Detection'

TERM_IT_AUDIT = 'IT Audit'

TERM_LAW_ENFORCEMENT = 'Law Enforcement'

TERM_LOG_REVIEW = 'Log Review'

TERM_MONITORING_SERVICE = 'Monitoring Service'

TERM_NIDS = 'NIDS'

TERM_SECURITY_ALARM = 'Security Alarm'

TERM_UNKNOWN = 'Unknown'

TERM_UNRELATED_PARTY = 'Unrelated Party'

TERM_USER = 'User'

class stix.common.vocabs.**HighMediumLow_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_HIGH = 'High'

TERM_LOW = 'Low'

TERM_MEDIUM = 'Medium'

TERM_NONE = 'None'

TERM_UNKNOWN = 'Unknown'

class stix.common.vocabs.**ImpactQualification_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_CATASTROPHIC = 'Catastrophic'

TERM_DAMAGING = 'Damaging'

TERM_DISTRACTING = 'Distracting'

TERM_INSIGNIFICANT = 'Insignificant'

TERM_PAINFUL = 'Painful'

TERM_UNKNOWN = 'Unknown'

class stix.common.vocabs.**ImpactRating_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_MAJOR = 'Major'

TERM_MINOR = 'Minor'

TERM_MODERATE = 'Moderate'

TERM_NONE = 'None'

TERM_UNKNOWN = 'Unknown'

class stix.common.vocabs.**IncidentCategory_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_DENIAL_OF_SERVICE = 'Denial of Service'

TERM_EXERCISEORNETWORK_DEFENSE_TESTING = 'Exercise/Network Defense Testing'

TERM_IMPROPER_USAGE = 'Improper Usage'

TERM_INVESTIGATION = 'Investigation'

TERM_MALICIOUS_CODE = 'Malicious Code'

TERM_SCANSORPROBESORATTEMPTED_ACCESS = 'Scans/Probes/Attempted Access'

TERM_UNAUTHORIZED_ACCESS = 'Unauthorized Access'

class stix.common.vocabs.**IncidentEffect_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_BRAND_OR_IMAGE_DEGRADATION = 'Brand or Image Degradation'

TERM_DATA_BREACH_OR_COMPROMISE = 'Data Breach or Compromise'

TERM_DEGRADATION_OF_SERVICE = 'Degradation of Service'

TERM_DESTRUCTION = 'Destruction'

TERM_DISRUPTION_OF_SERVICE_OR_OPERATIONS = 'Disruption of Service / Operations'

TERM_FINANCIAL_LOSS = 'Financial Loss'

TERM_LOSS_OF_COMPETITIVE_ADVANTAGE = 'Loss of Competitive Advantage'

TERM_LOSS_OF_COMPETITIVE_ADVANTAGE_ECONOMIC = 'Loss of Competitive Advantage - Economic'

TERM_LOSS_OF_COMPETITIVE_ADVANTAGE_MILITARY = 'Loss of Competitive Advantage - Military'

TERM_LOSS_OF_COMPETITIVE_ADVANTAGE_POLITICAL = 'Loss of Competitive Advantage - Political'

TERM_LOSS_OF_CONFIDENTIAL_OR_PROPRIETARY_INFORMATION_OR_INTELLECTUAL_PROPERTY = 'Loss of C

TERM_REGULATORY_COMPLIANCE_OR_LEGAL_IMPACT = 'Regulatory, Compliance or Legal Impact'

TERM_UNINTENDED_ACCESS = 'Unintended Access'

TERM_USER_DATA_LOSS = 'User Data Loss'

class stix.common.vocabs.**IncidentStatus_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_CLOSED = 'Closed'

TERM_CONTAINMENT_ACHIEVED = 'Containment Achieved'

TERM_DELETED = 'Deleted'

TERM_INCIDENT_REPORTED = 'Incident Reported'

TERM_NEW = 'New'

TERM_OPEN = 'Open'

TERM_REJECTED = 'Rejected'

TERM_RESTORATION_ACHIEVED = 'Restoration Achieved'

TERM_STALLED = 'Stalled'

class stix.common.vocabs.**IndicatorType_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ANONYMIZATION = 'Anonymization'

TERM_C2 = 'C2'

TERM_DOMAIN_WATCHLIST = 'Domain Watchlist'

TERM_EXFILTRATION = 'Exfiltration'

TERM_FILE_HASH_WATCHLIST = 'File Hash Watchlist'

TERM_HOST_CHARACTERISTICS = 'Host Characteristics'

TERM_IP_WATCHLIST = 'IP Watchlist'

TERM_MALICIOUS_EMAIL = 'Malicious E-mail'

TERM_MALWARE_ARTIFACTS = 'Malware Artifacts'

TERM_URL_WATCHLIST = 'URL Watchlist'

class stix.common.vocabs.**IndicatorType_1_1**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ANONYMIZATION = 'Anonymization'

TERM_C2 = 'C2'

TERM_COMPROMISED_PKI_CERTIFICATE = 'Compromised PKI Certificate'

TERM_DOMAIN_WATCHLIST = 'Domain Watchlist'

TERM_EXFILTRATION = 'Exfiltration'

TERM_FILE_HASH_WATCHLIST = 'File Hash Watchlist'

TERM_HOST_CHARACTERISTICS = 'Host Characteristics'

TERM_IMEI_WATCHLIST = 'IMEI Watchlist'

TERM_IMSI_WATCHLIST = 'IMSI Watchlist'

TERM_IP_WATCHLIST = 'IP Watchlist'

TERM_LOGIN_NAME = 'Login Name'

TERM_MALICIOUS_EMAIL = 'Malicious E-mail'

TERM_MALWARE_ARTIFACTS = 'Malware Artifacts'

TERM_URL_WATCHLIST = 'URL Watchlist'

class stix.common.vocabs.**InformationSourceRole_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_AGGREGATOR = 'Aggregator'

TERM_CONTENT_ENHANCERORREFINER = 'Content Enhancer/Refiner'

TERM_INITIAL_AUTHOR = 'Initial Author'

TERM_TRANSFORMERORTRANSLATOR = 'Transformer/Translator'

class stix.common.vocabs.**InformationType_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_AUTHENTICATION_COOKIES = 'Authentication Cookies'

TERM_INFORMATION_ASSETS = 'Information Assets'

TERM_INFORMATION_ASSETS_CORPORATE_EMPLOYEE_INFORMATION = 'Information Assets - Corporate Employee

TERM_INFORMATION_ASSETS_CUSTOMER_PII = 'Information Assets - Customer PII'

TERM_INFORMATION_ASSETS_EMAIL_LISTS_OR_ARCHIVES = 'Information Assets - Email Lists / Archives'

TERM_INFORMATION_ASSETS_FINANCIAL_DATA = 'Information Assets - Financial Data'

TERM_INFORMATION_ASSETS_INTELLECTUAL_PROPERTY = 'Information Assets - Intellectual Property'

TERM_INFORMATION_ASSETS_MOBILE_PHONE_CONTACTS = 'Information Assets - Mobile Phone Contacts'

TERM_INFORMATION_ASSETS_USER_CREDENTIALS = 'Information Assets - User Credentials'

class stix.common.vocabs.**IntendedEffect_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ACCOUNT_TAKEOVER = 'Account Takeover'

TERM_ADVANTAGE = 'Advantage'

TERM_ADVANTAGE_ECONOMIC = 'Advantage - Economic'

TERM_ADVANTAGE_MILITARY = 'Advantage - Military'

TERM_ADVANTAGE_POLITICAL = 'Advantage - Political'

TERM_BRAND_DAMAGE = 'Brand Damage'

TERM_COMPETITIVE_ADVANTAGE = 'Competitive Advantage'

TERM_DEGRADATION_OF_SERVICE = 'Degradation of Service'

TERM_DENIAL_AND_DECEPTION = 'Denial and Deception'

TERM_DESTRUCTION = 'Destruction'

TERM_DISRUPTION = 'Disruption'

TERM_EMBARRASSMENT = 'Embarrassment'

TERM_EXPOSURE = 'Exposure'

TERM_EXTORTION = 'Extortion'

TERM_FRAUD = 'Fraud'

TERM_HARASSMENT = 'Harassment'

TERM_ICS_CONTROL = 'ICS Control'

TERM_THEFT = 'Theft'

TERM_THEFT_CREDENTIAL_THEFT = 'Theft - Credential Theft'

TERM_THEFT_IDENTITY_THEFT = 'Theft - Identity Theft'

TERM_THEFT_INTELLECTUAL_PROPERTY = 'Theft - Intellectual Property'

TERM_THEFT_THEFT_OF_PROPRIETARY_INFORMATION = 'Theft - Theft of Proprietary Information'

TERM_TRAFFIC_DIVERSION = 'Traffic Diversion'

TERM_UNAUTHORIZED_ACCESS = 'Unauthorized Access'

class stix.common.vocabs.**LocationClass_1_0**(*value=None*)

Bases: *stix.common.vocabs.VocabString*

TERM_COLOCATED = 'Co-Located'

TERM_EXTERNALLYLOCATED = 'Externally-Located'

TERM_INTERNALLYLOCATED = 'Internally-Located'

TERM_MOBILE = 'Mobile'

TERM_UNKNOWN = 'Unknown'

class stix.common.vocabs.**LossDuration_1_0**(*value=None*)

Bases: *stix.common.vocabs.VocabString*

TERM_DAYS = 'Days'

TERM_HOURS = 'Hours'

TERM_MINUTES = 'Minutes'

TERM_PERMANENT = 'Permanent'

TERM_SECONDS = 'Seconds'

TERM_UNKNOWN = 'Unknown'

TERM_WEEKS = 'Weeks'

class stix.common.vocabs.**LossProperty_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ACCOUNTABILITY = 'Accountability'

TERM_AVAILABILITY = 'Availability'

TERM_CONFIDENTIALITY = 'Confidentiality'

TERM_INTEGRITY = 'Integrity'

TERM_NONREPUDIATION = 'Non-Repudiation'

class stix.common.vocabs.**MalwareType_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ADWARE = 'Adware'

TERM_AUTOMATED_TRANSFER_SCRIPTS = 'Automated Transfer Scripts'

TERM_BOT = 'Bot'

TERM_BOT_CREDENTIAL_THEFT = 'Bot - Credential Theft'

TERM_BOT_DDOS = 'Bot - DDoS'

TERM_BOT_LOADER = 'Bot - Loader'

TERM_BOT_SPAM = 'Bot - Spam'

TERM_DIALER = 'Dialer'

TERM_DOS_OR_DDOS = 'DoS / DDoS'

TERM_DOS_OR_DDOS_PARTICIPATORY = 'DoS / DDoS - Participatory'

TERM_DOS_OR_DDOS_SCRIPT = 'DoS / DDoS - Script'

TERM_DOS_OR_DDOS_STRESS_TEST_TOOLS = 'DoS / DDoS - Stress Test Tools'

TERM_EXPLOIT_KITS = 'Exploit Kits'

TERM_POS_OR_ATM_MALWARE = 'POS / ATM Malware'

TERM_RANSOMWARE = 'Ransomware'

TERM_REMOTE_ACCESS_TROJAN = 'Remote Access Trojan'

TERM_ROGUE_ANTIVIRUS = 'Rogue Antivirus'

TERM_ROOTKIT = 'Rootkit'

class stix.common.vocabs.**ManagementClass_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_COMANAGEMENT = 'Co-Management'

TERM_EXTERNALLYMANAGEMENT = 'Externally-Management'

TERM_INTERNALLYMANAGED = 'Internally-Managed'

TERM_UNKNOWN = 'Unknown'

class stix.common.vocabs.**Motivation_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_EGO = 'Ego'

TERM_FINANCIAL_OR_ECONOMIC = 'Financial or Economic'

TERM_IDEOLOGICAL = 'Ideological'

TERM_IDEOLOGICAL_ANTICORRUPTION = 'Ideological - Anti-Corruption'

TERM_IDEOLOGICAL_ANTIESTABLISMENT = 'Ideological - Anti-Establisment'

TERM_IDEOLOGICAL_ENVIRONMENTAL = 'Ideological - Environmental'

TERM_IDEOLOGICAL_ETHNIC_NATIONALIST = 'Ideological - Ethnic / Nationalist'

TERM_IDEOLOGICAL_HUMAN_RIGHTS = 'Ideological - Human Rights'

TERM_IDEOLOGICAL_INFORMATION_FREEDOM = 'Ideological - Information Freedom'

TERM_IDEOLOGICAL_RELIGIOUS = 'Ideological - Religious'

TERM_IDEOLOGICAL_SECURITY_AWARENESS = 'Ideological - Security Awareness'

TERM_MILITARY = 'Military'

TERM_OPPORTUNISTIC = 'Opportunistic'

TERM_POLICITAL = 'Policital'

class stix.common.vocabs.**Motivation_1_0_1**(*value=None*)

Bases: *stix.common.vocabs.VocabString*

TERM_EGO = 'Ego'

TERM_FINANCIAL_OR_ECONOMIC = 'Financial or Economic'

TERM_IDEOLOGICAL = 'Ideological'

TERM_IDEOLOGICAL_ANTI_CORRUPTION = 'Ideological - Anti-Corruption'

TERM_IDEOLOGICAL_ANTI_ESTABLISHMENT = 'Ideological - Anti-Establishment'

TERM_IDEOLOGICAL_ENVIRONMENTAL = 'Ideological - Environmental'

TERM_IDEOLOGICAL_ETHNIC_NATIONALIST = 'Ideological - Ethnic / Nationalist'

TERM_IDEOLOGICAL_HUMAN_RIGHTS = 'Ideological - Human Rights'

TERM_IDEOLOGICAL_INFORMATION_FREEDOM = 'Ideological - Information Freedom'

TERM_IDEOLOGICAL_SECURITY_AWARENESS = 'Ideological - Security Awareness'

TERM_IDEOLOGICAL__RELIGIOUS = 'Ideological - Religious'

TERM_MILITARY = 'Military'

TERM_OPPORTUNISTIC = 'Opportunistic'

TERM_POLICITAL = 'Policital'

class stix.common.vocabs.**Motivation_1_1**(*value=None*)

Bases: *stix.common.vocabs.VocabString*

TERM_EGO = 'Ego'

TERM_FINANCIAL_OR_ECONOMIC = 'Financial or Economic'

TERM_IDEOLOGICAL = 'Ideological'

TERM_IDEOLOGICAL_ANTICORRUPTION = 'Ideological - Anti-Corruption'

TERM_IDEOLOGICAL_ANTIESTABLISHMENT = 'Ideological - Anti-Establishment'

TERM_IDEOLOGICAL_ENVIRONMENTAL = 'Ideological - Environmental'

TERM_IDEOLOGICAL_ETHNIC_NATIONALIST = 'Ideological - Ethnic / Nationalist'

TERM_IDEOLOGICAL_HUMAN_RIGHTS = 'Ideological - Human Rights'

TERM_IDEOLOGICAL_INFORMATION_FREEDOM = 'Ideological - Information Freedom'

TERM_IDEOLOGICAL_RELIGIOUS = 'Ideological - Religious'

TERM_IDEOLOGICAL_SECURITY_AWARENESS = 'Ideological - Security Awareness'

TERM_MILITARY = 'Military'

TERM_OPPORTUNISTIC = 'Opportunistic'

TERM_POLITICAL = 'Political'

class stix.common.vocabs.**OwnershipClass_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_CUSTOMEROWNED = 'Customer-Owned'

TERM_EMPLOYEEOWNED = 'Employee-Owned'

TERM_INTERNALLYOWNED = 'Internally-Owned'

TERM_PARTNEROWNED = 'Partner-Owned'

TERM_UNKNOWN = 'Unknown'

class stix.common.vocabs.**PackageIntent_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ATTACK_PATTERN_CHARACTERIZATION = 'Attack Pattern Characterization'

TERM_CAMPAIGN_CHARACTERIZATION = 'Campaign Characterization'

TERM_COLLECTIVE_THREAT_INTELLIGENCE = 'Collective Threat Intelligence'

TERM_COURSES_OF_ACTION = 'Courses of Action'

TERM_EXPLOIT_CHARACTERIZATION = 'Exploit Characterization'

TERM_INCIDENT = 'Incident'

TERM_INDICATORS = 'Indicators'

TERM_INDICATORS_ENDPOINT_CHARACTERISTICS = 'Indicators - Endpoint Characteristics'

TERM_INDICATORS_MALWARE_ARTIFACTS = 'Indicators - Malware Artifacts'

TERM_INDICATORS_NETWORK_ACTIVITY = 'Indicators - Network Activity'

TERM_INDICATORS_PHISHING = 'Indicators - Phishing'

TERM_INDICATORS_WATCHLIST = 'Indicators - Watchlist'

TERM_MALWARE_CHARACTERIZATION = 'Malware Characterization'

TERM_MALWARE_SAMPLES = 'Malware Samples'

TERM_OBSERVATIONS = 'Observations'

TERM_OBSERVATIONS_EMAIL = 'Observations - Email'

TERM_THREAT_ACTOR_CHARACTERIZATION = 'Threat Actor Characterization'

TERM_THREAT_REPORT = 'Threat Report'

TERM_TTP_INFRASTRUCTURE = 'TTP - Infrastructure'

TERM_TTP_TOOLS = 'TTP - Tools'

class stix.common.vocabs.**PlanningAndOperationalSupport_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_DATA_EXPLOITATION = 'Data Exploitation'

TERM_DATA_EXPLOITATION_ANALYTIC_SUPPORT = 'Data Exploitation - Analytic Support'

TERM_DATA_EXPLOITATION_TRANSLATION_SUPPORT = 'Data Exploitation - Translation Support'

TERM_FINANCIAL_RESOURCES = 'Financial Resources'

TERM_FINANCIAL_RESOURCES_ACADEMIC = 'Financial Resources - Academic'

TERM_FINANCIAL_RESOURCES_COMMERCIAL = 'Financial Resources - Commercial'

TERM_FINANCIAL_RESOURCES_GOVERNMENT = 'Financial Resources - Government'

TERM_FINANCIAL_RESOURCES_HACKTIVIST_OR_GRASSROOT = 'Financial Resources - Hacktivist or Grassroot'

TERM_FINANCIAL_RESOURCES_NONATTRIBUTABLE_FINANCE = 'Financial Resources - Non-Attributable Finance'

TERM_PLANNING = 'Planning '

TERM_PLANNING_OPEN_SOURCE_INTELLIGENCE_OSINT_GETHERING = 'Planning - Open-Source Intelligence (OSI

TERM_PLANNING_OPERATIONAL_COVER_PLAN = 'Planning - Operational Cover Plan'

TERM_PLANNING_PRE_OPERATIONAL_SURVEILLANCE_AND_RECONNAISSANCE = 'Planning - Pre-Operational Surv

TERM_PLANNING_TARGET_SELECTION = 'Planning - Target Selection'

TERM_SKILL_DEVELOPMENT_RECRUITMENT = 'Skill Development / Recruitment'

TERM_SKILL_DEVELOPMENT_RECRUITMENT_CONTRACTING_AND_HIRING = 'Skill Development / Recruitment - Co

TERM_SKILL_DEVELOPMENT_RECRUITMENT_DOCUMENT_EXPLOITATION_DOCEX_TRAINING = 'Skill Development

TERM_SKILL_DEVELOPMENT_RECRUITMENT_INTERNAL_TRAINING = 'Skill Development / Recruitment - Internal T

TERM_SKILL_DEVELOPMENT_RECRUITMENT_MILITARY_PROGRAMS = 'Skill Development / Recruitment - Military P

TERM_SKILL_DEVELOPMENT_RECRUITMENT_SECURITY_HACKER_CONFERENCES = 'Skill Development / Recruitme

TERM_SKILL_DEVELOPMENT_RECRUITMENT_UNDERGROUND_FORUMS = 'Skill Development / Recruitment - Undergr

TERM_SKILL_DEVELOPMENT_RECRUITMENT_UNIVERSITY_PROGRAMS = 'Skill Development / Recruitment - Univers

class stix.common.vocabs.**PlanningAndOperationalSupport_1_0_1**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_DATA_EXPLOITATION = 'Data Exploitation'

TERM_DATA_EXPLOITATION_ANALYTIC_SUPPORT = 'Data Exploitation - Analytic Support'

TERM_DATA_EXPLOITATION_TRANSLATION_SUPPORT = 'Data Exploitation - Translation Support'

TERM_FINANCIAL_RESOURCES = 'Financial Resources'

TERM_FINANCIAL_RESOURCES_ACADEMIC = 'Financial Resources - Academic'

TERM_FINANCIAL_RESOURCES_COMMERCIAL = 'Financial Resources - Commercial'

TERM_FINANCIAL_RESOURCES_GOVERNMENT = 'Financial Resources - Government'

TERM_FINANCIAL_RESOURCES_HACKTIVIST_OR_GRASSROOT = 'Financial Resources - Hacktivist or Grassroot'

TERM_FINANCIAL_RESOURCES_NONATTRIBUTABLE_FINANCE = 'Financial Resources - Non-Attributable Finance'

TERM_PLANNING = 'Planning'

TERM_PLANNING_OPENSOURCE_INTELLIGENCE_OSINT_GATHERING = 'Planning - Open-Source Intelligence (OSIN

TERM_PLANNING_OPERATIONAL_COVER_PLAN = 'Planning - Operational Cover Plan'

TERM_PLANNING_PREOPERATIONAL_SURVEILLANCE_AND_RECONNAISSANCE = 'Planning - Pre-Operational Surve

TERM_PLANNING_TARGET_SELECTION = 'Planning - Target Selection'

TERM_SKILL_DEVELOPMENT_OR_RECRUITMENT = 'Skill Development / Recruitment'

TERM_SKILL_DEVELOPMENT_OR_RECRUITMENT_CONTRACTING_AND_HIRING = 'Skill Development / Recruitment -

TERM_SKILL_DEVELOPMENT_OR_RECRUITMENT_DOCUMENT_EXPLOITATION_DOCEX_TRAINING = 'Skill Develop

TERM_SKILL_DEVELOPMENT_OR_RECRUITMENT_INTERNAL_TRAINING = 'Skill Development / Recruitment - Intern

TERM_SKILL_DEVELOPMENT_OR_RECRUITMENT_MILITARY_PROGRAMS = 'Skill Development / Recruitment - Milita

TERM_SKILL_DEVELOPMENT_OR_RECRUITMENT_SECURITY_OR_HACKER_CONFERENCES = 'Skill Development / Re

TERM_SKILL_DEVELOPMENT_OR_RECRUITMENT_UNDERGROUND_FORUMS = 'Skill Development / Recruitment - Und

TERM_SKILL_DEVELOPMENT_OR_RECRUITMENT_UNIVERSITY_PROGRAMS = 'Skill Development / Recruitment - Un

class stix.common.vocabs.**ReportIntent_1_0**(*value=None*)

Bases: *stix.common.vocabs.VocabString*

TERM_ATTACK_PATTERN_CHARACTERIZATION = 'Attack Pattern Characterization'

TERM_CAMPAIGN_CHARACTERIZATION = 'Campaign Characterization'

TERM_COLLECTIVE_THREAT_INTELLIGENCE = 'Collective Threat Intelligence'

TERM_COURSES_OF_ACTION = 'Courses of Action'

TERM_EXPLOIT_CHARACTERIZATION = 'Exploit Characterization'

TERM_INCIDENT = 'Incident'

TERM_INDICATORS = 'Indicators'

TERM_INDICATORS_ENDPOINT_CHARACTERISTICS = 'Indicators - Endpoint Characteristics'

TERM_INDICATORS_MALWARE_ARTIFACTS = 'Indicators - Malware Artifacts'

TERM_INDICATORS_NETWORK_ACTIVITY = 'Indicators - Network Activity'

TERM_INDICATORS_PHISHING = 'Indicators - Phishing'

TERM_INDICATORS_WATCHLIST = 'Indicators - Watchlist'

TERM_MALWARE_CHARACTERIZATION = 'Malware Characterization'

TERM_MALWARE_SAMPLES = 'Malware Samples'

TERM_OBSERVATIONS = 'Observations'

TERM_OBSERVATIONS_EMAIL = 'Observations - Email'

TERM_THREAT_ACTOR_CHARACTERIZATION = 'Threat Actor Characterization'

TERM_THREAT_REPORT = 'Threat Report'

TERM_TTP_INFRASTRUCTURE = 'TTP - Infrastructure'

TERM_TTP_TOOLS = 'TTP - Tools'

class stix.common.vocabs.**SecurityCompromise_1_0**(*value=None*)

Bases: *stix.common.vocabs.VocabString*

TERM_NO = 'No'

TERM_SUSPECTED = 'Suspected'

TERM_UNKNOWN = 'Unknown'

TERM_YES = 'Yes'

class stix.common.vocabs.**SystemType_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ENTERPRISE_SYSTEMS = 'Enterprise Systems'

TERM_ENTERPRISE_SYSTEMS_APPLICATION_LAYER = 'Enterprise Systems - Application Layer'

TERM_ENTERPRISE_SYSTEMS_DATABASE_LAYER = 'Enterprise Systems - Database Layer'

TERM_ENTERPRISE_SYSTEMS_ENTERPRISE_TECHNOLOGIES_AND_SUPPORT_INFRASTRUCTURE = 'Enterprise Sy

TERM_ENTERPRISE_SYSTEMS_NETWORKING_DEVICES = 'Enterprise Systems - Networking Devices'

TERM_ENTERPRISE_SYSTEMS_NETWORK_SYSTEMS = 'Enterprise Systems - Network Systems'

TERM_ENTERPRISE_SYSTEMS_VOIP = 'Enterprise Systems - VoIP'

TERM_ENTERPRISE_SYSTEMS_WEB_LAYER = 'Enterprise Systems - Web Layer'

TERM_INDUSTRIAL_CONTROL_SYSTEMS = 'Industrial Control Systems'

TERM_INDUSTRIAL_CONTROL_SYSTEMS_EQUIPMENT_UNDER_CONTROL = 'Industrial Control Systems - Equipment

TERM_INDUSTRIAL_CONTROL_SYSTEMS_OPERATIONS_MANAGEMENT = 'Industrial Control Systems - Operations Ma

TERM_INDUSTRIAL_CONTROL_SYSTEMS_SAFETY_PROTECTION_AND_LOCAL_CONTROL = 'Industrial Control Syste

TERM_INDUSTRIAL_CONTROL_SYSTEMS_SUPERVISORY_CONTROL = 'Industrial Control Systems - Supervisory Cont

TERM_MOBILE_SYSTEMS = 'Mobile Systems'

TERM_MOBILE_SYSTEMS_MOBILE_DEVICES = 'Mobile Systems - Mobile Devices'

TERM_MOBILE_SYSTEMS_MOBILE_OPERATING_SYSTEMS = 'Mobile Systems - Mobile Operating Systems'

TERM_MOBILE_SYSTEMS_NEAR_FIELD_COMMUNICATIONS = 'Mobile Systems - Near Field Communications'

TERM_THIRDPARTY_SERVICES = 'Third-Party Services'

TERM_THIRDPARTY_SERVICES_APPLICATION_STORES = 'Third-Party Services - Application Stores'

TERM_THIRDPARTY_SERVICES_CLOUD_SERVICES = 'Third-Party Services - Cloud Services'

TERM_THIRDPARTY_SERVICES_SECURITY_VENDORS = 'Third-Party Services - Security Vendors'

TERM_THIRDPARTY_SERVICES_SOCIAL_MEDIA = 'Third-Party Services - Social Media'

TERM_THIRDPARTY_SERVICES_SOFTWARE_UPDATE = 'Third-Party Services - Software Update'

TERM_USERS = 'Users'

TERM_USERS_APPLICATION_AND_SOFTWARE = 'Users - Application And Software'

TERM_USERS_REMOVABLE_MEDIA = 'Users - Removable Media'

TERM_USERS_WORKSTATION = 'Users - Workstation'

class stix.common.vocabs.**ThreatActorSophistication_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_ASPIRANT = 'Aspirant'

TERM_EXPERT = 'Expert'

TERM_INNOVATOR = 'Innovator'

TERM_NOVICE = 'Novice'

TERM_PRACTITIONER = 'Practitioner'

class stix.common.vocabs.**ThreatActorType_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_CYBER_ESPIONAGE_OPERATIONS = 'Cyber Espionage Operations'

TERM_DISGRUNTLED_CUSTOMER_OR_USER = 'Disgruntled Customer / User'

TERM_ECRIME_ACTOR_CREDENTIAL_THEFT_BOTNET_OPERATOR = 'eCrime Actor - Credential Theft Botnet Operat

TERM_ECRIME_ACTOR_CREDENTIAL_THEFT_BOTNET_SERVICE = 'eCrime Actor - Credential Theft Botnet Service'

TERM_ECRIME_ACTOR_MALWARE_DEVELOPER = 'eCrime Actor - Malware Developer'

TERM_ECRIME_ACTOR_MONEY_LAUNDERING_NETWORK = 'eCrime Actor - Money Laundering Network'

TERM_ECRIME_ACTOR_ORGANIZED_CRIME_ACTOR = 'eCrime Actor - Organized Crime Actor'

TERM_ECRIME_ACTOR_SPAM_SERVICE = 'eCrime Actor - Spam Service'

TERM_ECRIME_ACTOR_TRAFFIC_SERVICE = 'eCrime Actor - Traffic Service'

TERM_ECRIME_ACTOR_UNDERGROUND_CALL_SERVICE = 'eCrime Actor - Underground Call Service'

TERM_HACKER = 'Hacker'

TERM_HACKER_BLACK_HAT = 'Hacker - Black hat'

TERM_HACKER_GRAY_HAT = 'Hacker - Gray hat'

TERM_HACKER_WHITE_HAT = 'Hacker - White hat'

TERM_HACKTIVIST = 'Hacktivist'

TERM_INSIDER_THREAT = 'Insider Threat'

TERM_STATE_ACTOR_OR_AGENCY = 'State Actor / Agency'

class stix.common.vocabs.**Versioning_1_0**(*value=None*)
Bases: *stix.common.vocabs.VocabString*

TERM_REVOKES = 'Revokes'

TERM_UPDATES_REVISES = 'Updates - Revises'

TERM_UPDATE_CORRECTS = 'Updates - Corrects'

class stix.common.vocabs.**VocabString**(*value=None*)
Bases: *stix.base.Entity*

is_plain()
Whether the VocabString can be represented as a single value.

stix.common.vocabs.**AssetType**
alias of *AssetType_1_0*

stix.common.vocabs.**AttackerInfrastructureType**
alias of *AttackerInfrastructureType_1_0*

stix.common.vocabs.**AttackerToolType**
alias of *AttackerToolType_1_0*

stix.common.vocabs.**AvailabilityLossType**
alias of *AvailabilityLossType_1_1_1*

stix.common.vocabs.**CampaignStatus**
alias of *CampaignStatus_1_0*

stix.common.vocabs.**COAStage**
alias of *COAStage_1_0*

stix.common.vocabs.**CourseOfActionType**
alias of *CourseOfActionType_1_0*

stix.common.vocabs.**DiscoveryMethod**
alias of *DiscoveryMethod_2_0*

stix.common.vocabs.**HighMediumLow**
alias of *HighMediumLow_1_0*

stix.common.vocabs.**ImpactQualification**
alias of *ImpactQualification_1_0*

stix.common.vocabs.**ImpactRating**
alias of *ImpactRating_1_0*

stix.common.vocabs.**IncidentCategory**
alias of *IncidentCategory_1_0*

stix.common.vocabs.**IncidentEffect**
alias of *IncidentEffect_1_0*

stix.common.vocabs.**IncidentStatus**
alias of *IncidentStatus_1_0*

stix.common.vocabs.**IndicatorType**
alias of *IndicatorType_1_1*

stix.common.vocabs.**InformationSourceRole**
alias of *InformationSourceRole_1_0*

stix.common.vocabs.**InformationType**
alias of *InformationType_1_0*

stix.common.vocabs.**IntendedEffect**
alias of *IntendedEffect_1_0*

stix.common.vocabs.**LocationClass**
alias of *LocationClass_1_0*

stix.common.vocabs.**LossDuration**
alias of *LossDuration_1_0*

stix.common.vocabs.**LossProperty**
alias of *LossProperty_1_0*

stix.common.vocabs.**MalwareType**
alias of *MalwareType_1_0*

stix.common.vocabs.**ManagementClass**
alias of *ManagementClass_1_0*

stix.common.vocabs.**Motivation**
alias of *Motivation_1_1*

stix.common.vocabs.**OwnershipClass**
alias of *OwnershipClass_1_0*

stix.common.vocabs.**PackageIntent**
alias of *PackageIntent_1_0*

stix.common.vocabs.**PlanningAndOperationalSupport**
alias of *PlanningAndOperationalSupport_1_0_1*

stix.common.vocabs.**SecurityCompromise**
alias of *SecurityCompromise_1_0*

stix.common.vocabs.**SystemType**
alias of *SystemType_1_0*

stix.common.vocabs.**ThreatActorSophistication**
alias of *ThreatActorSophistication_1_0*

stix.common.vocabs.**ThreatActorType**
alias of *ThreatActorType_1_0*

Functions

stix.common.vocabs.**add_vocab**(*cls*)
Registers a VocabString subclass.

> **Note:** The *register_vocab()* class decorator has replaced this method.

stix.common.vocabs.**register_vocab**(*cls*)
Class decorator that registers a VocabString subclass.

Also, calculate all the permitted values for class being decorated by adding an _ALLOWED_VALUES tuple of all the values of class members beginning with TERM_.

3.1.4 STIX Core

Modules located in the stix.core package

Version: 1.2.0.11

stix.core.stix_header Module

Classes

class stix.core.stix_header.**STIXHeader**(*package_intents=None*, *description=None*, *handling=None*, *information_source=None*, *title=None*, *short_description=None*)

Bases: *stix.base.Entity*

The STIX Package Header.

Parameters

- **handling** – The data marking section of the Header.
- **information_source** – The *InformationSource* section of the Header.
- **package_intents** – **DEPRECATED**. A collection of *VocabString* defining the intent of the parent *STIXPackage*.
- **description** – **DEPRECATED**. A description of the intent or purpose of the parent *STIXPackage*.

- **short_description** – **DEPRECATED**. A short description of the intent or purpose of the parent *STIXPackage*.
- **title** – **DEPRECATED**. The title of the *STIXPackage*.

profiles
A collection of STIX Profiles the parent *STIXPackage* conforms to.

title
DEPRECATED. The title of the parent *STIXPackage*.

add_description(*description*)
DEPRECATED. Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

add_package_intent(*package_intent*)
DEPRECATED. Adds *VocabString* object to the `package_intents` collection.

If the input is not an instance of *VocabString*, an effort will be made to convert it into an instance of `PackageIntent`.

add_profile(*profile*)
Adds a profile to the STIX Header. A Profile is represented by a string URI.

add_short_description(*description*)
DEPRECATED. Adds a description to the `short_descriptions` collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description
DEPRECATED. A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

short_description
DEPRECATED. A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.core.stix_package Module

Overview

The *stix.core.stix_package* module implements *STIXPackage*.

STIXType defines a bundle of information characterized in the Structured Threat Information eXpression (STIX) language.

Documentation Resources

- STIX Package Data Model

Classes

class stix.core.stix_package.**STIXPackage**(*id_=None*, *idref=None*, *timestamp=None*, *stix_header=None*, *courses_of_action=None*, *exploit_targets=None*, *indicators=None*, *observables=None*, *incidents=None*, *threat_actors=None*, *ttps=None*, *campaigns=None*, *related_packages=None*, *reports=None*)

Bases: *stix.base.Entity*

A STIX Package object.

Parameters

- **id** (*optional*) – An identifier. If `None`, a value will be generated via `mixbox.idgen.create_id()`. If set, this will unset the `idref` property.
- **idref** – **DEPRECATED** An identifier reference. If set this will unset the `id_` property.
- **timestamp** – **DEPRECATED** A timestamp value. Can be an instance of `datetime.datetime` or `str`.
- **header** – A Report *Header* object.
- **campaigns** – A collection of *Campaign* objects.
- **course_of_action** – A collection of *CourseOfAction* objects.
- **exploit_targets** – A collection of *ExploitTarget* objects.
- **incidents** – A collection of *Incident* objects.
- **indicators** – A collection of *Indicator* objects.
- **threat_actors** – A collection of *ThreatActor* objects.
- **ttps** – A collection of *TTP* objects.
- **related_packages** – **DEPRECATED**. A collection of `RelatedPackage` objects.
- **reports** – A collection of *Report* objects.

add(*entity*)
Adds *entity* to a top-level collection. For example, if *entity* is an Indicator object, the *entity* will be added to the `indicators` top-level collection.

add_campaign(*campaign*)
Adds a `Campaign` object to the `campaigns` collection.

add_course_of_action(*course_of_action*)
Adds an *CourseOfAction* object to the `courses_of_action` collection.

add_exploit_target(*exploit_target*)
Adds an *ExploitTarget* object to the exploit_targets collection.

add_incident(*incident*)
Adds an *Incident* object to the incidents collection.

add_indicator(*indicator*)
Adds an *Indicator* object to the indicators collection.

add_observable(*observable*)
Adds an Observable object to the observables collection.

If *observable* is not an Observable instance, an effort will be made to convert it to one.

add_related_package(*related_package*)
Adds a RelatedPackage object to the related_packages collection.

add_report(*report*)
Adds a *Report* object to the reports collection.

add_threat_actor(*threat_actor*)
Adds an *ThreatActor* object to the threat_actors collection.

add_ttp(*ttp*)
Adds an *TTP* object to the ttps collection.

find(*id_*)
Searches the children of a Entity implementation for an object with an id_ property that matches *id_*.

classmethod from_xml(*xml_file*, *encoding=None*)
Parses the *xml_file* file-like object and returns a *STIXPackage* instance.

Parameters

- **xml_file** – A file, file-like object, etree._Element, or etree._ElementTree instance.
- **encoding** – The character encoding of the *xml_file* input. If None, an attempt will be made to determine the input character encoding. Default is None.

Returns An instance of *STIXPackage*.

to_dict()
Convert to a dict

Subclasses can override this function.

Returns Python dict with keys set from this Entity.

to_dict()
Convert to a dict

Subclasses can override this function.

Returns Python dict with keys set from this Entity.

to_json()
Export an object as a JSON String.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's _binding_class with properties set from this Entity.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's `_binding_class` with properties set from this Entity.

to_xml(*include_namespaces=True*, *include_schemalocs=False*, *ns_dict=None*, *schemaloc_dict=None*, *pretty=True*, *auto_namespace=True*, *encoding='utf-8'*)
Serializes a `Entity` instance to an XML string.

The default character encoding is `utf-8` and can be set via the *encoding* parameter. If *encoding* is `None`, a string (unicode in Python 2, str in Python 3) is returned.

Parameters

- **auto_namespace** – Automatically discover and export XML namespaces for a STIX `Entity` instance.
- **include_namespaces** – Export namespace definitions in the output XML. Default is `True`.
- **include_schemalocs** – Export `xsi:schemaLocation` attribute in the output document. This will attempt to associate namespaces declared in the STIX document with schema locations. If a namespace cannot be resolved to a schemaLocation, a Python warning will be raised. Schemalocations will only be exported if *include_namespaces* is also `True`.
- **ns_dict** – Dictionary of XML definitions (namespace is key, alias is value) to include in the exported document. This must be passed in if *auto_namespace* is `False`.
- **schemaloc_dict** – Dictionary of XML `namespace: schema location` mappings to include in the exported document. These will only be included if *auto_namespace* is `False`.
- **pretty** – Pretty-print the XML.
- **encoding** – The output character encoding. Default is `utf-8`. If *encoding* is set to `None`, a string (unicode in Python 2, str in Python 3) is returned.

Returns An XML string for this `Entity` instance. Default character encoding is `utf-8`.

class `stix.core.stix_package.`**RelatedPackages**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

Version: 1.2.0.11

`stix.core.ttps` Module

Classes

class `stix.core.ttps.`**TTPs**(*ttps=None*)
Bases: *stix.base.Entity*

3.1.5 STIX Course of Action (COA)

Modules located in the stix.coa package

Version: 1.2.0.11

stix.coa Module

Overview

The *stix.coa* module implements *CourseOfAction*.

CoursesOfAction are specific measures to be taken to address threat whether they are corrective or preventative to address ExploitTargets, or responsive to counter or mitigate the potential impacts of Incidents

Documentation Resources

- Course Of Action Data Model

Classes

class stix.coa.**CourseOfAction**(*id_=None*, *idref=None*, *timestamp=None*, *title=None*, *description=None*, *short_description=None*)

Bases: stix.base.BaseCoreComponent

Implementation of the STIX Course of Action.

Parameters

- **id** (*optional*) – An identifier. If None, a value will be generated via mixbox.idgen.create_id(). If set, this will unset the idref property.
- **idref** (*optional*) – An identifier reference. If set this will unset the id_ property.
- **timestamp** (*optional*) – A timestamp value. Can be an instance of datetime.datetime or str.
- **description** – A description of the purpose or intent of this object.
- **short_description** – A short description of the intent or purpose of this object.
- **title** – The title of this object.

add_description(*description*)

Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)

Adds a description to the short_descriptions collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description

A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

find(*id_*)

Searches the children of a Entity implementation for an object with an id_ property that matches *id_*.

short_description
A single short description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

to_dict()
Convert to a dict

Subclasses can override this function.

Returns Python dict with keys set from this Entity.

to_json()
Export an object as a JSON String.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's _binding_class with properties set from this Entity.

class stix.coa.**RelatedCOAs**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

Version: 1.2.0.11

stix.coa.objective Module

Classes

class stix.coa.objective.**Objective**(*description=None*, *short_description=None*)
Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)
Adds a description to the short_descriptions collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

short_description
A single short description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

3.1.6 STIX Exploit Target

Modules located in the stix.exploit_target package

Version: 1.2.0.11

stix.exploit_target Module

Overview

The *stix.exploit_target* module implements *ExploitTarget*.

This denotes the specific vulnerability, weakness, or software configuration that creates a security risk.

Documentation Resources

- Exploit Target Data Model
- Exploit Target Idioms

Classes

class stix.exploit_target.**ExploitTarget**(*id_=None*, *idref=None*, *timestamp=None*, *title=None*, *description=None*, *short_description=None*)

Bases: stix.base.BaseCoreComponent

Implementation of STIX Exploit Target.

Parameters

- **id** (*optional*) – An identifier. If None, a value will be generated via mixbox.idgen.create_id(). If set, this will unset the idref property.
- **idref** (*optional*) – An identifier reference. If set this will unset the id_ property.
- **title** (*optional*) – A string title.
- **timestamp** (*optional*) – A timestamp value. Can be an instance of datetime.datetime or str.
- **description** (*optional*) – A string description.
- **short_description** (*optional*) – A string short description.

add_configuration(*value*)
Adds a configuration to the `configurations` list property.

Note: If `None` is passed in no value is added

Parameters **value** – A configuration value.

Raises `ValueError` – If the *value* param is of type *Configuration*

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)
Adds a description to the `short_descriptions` collection.

This is the same as calling "foo.short_descriptions.add(bar)".

add_vulnerability(*value*)
Adds a vulnerability to the `vulnerabilities` list property.

Note: If `None` is passed in no value is added

Parameters **value** – A *Vulnerability* object..

Raises `ValueError` – if the *value* param is of type *Vulnerability*

add_weakness(*value*)
Adds a weakness to the `weaknesses` list property.

Note: If `None` is passed in no value is added

Parameters **value** – A *Weakness* object.

Raises: ValueError if the *value* param is of type *Weakness*

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

find(*id_*)
Searches the children of a `Entity` implementation for an object with an `id_` property that matches *id_*.

short_description
A single short description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

to_dict()
Convert to a dict

Subclasses can override this function.

Returns Python dict with keys set from this Entity.

to_json()
Export an object as a JSON String.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's _binding_class with properties set from this Entity.

class stix.exploit_target.**PotentialCOAs**(*coas=None*, *scope=None*)
Bases: *stix.common.related.GenericRelationshipList*

A list of Potential_COA objects, defaults to empty array

class stix.exploit_target.**RelatedExploitTargets**(*related_exploit_targets=None*, *scope=None*)
Bases: *stix.common.related.GenericRelationshipList*

A list of RelatedExploitTargets objects, defaults to empty array

Version: 1.2.0.11

stix.exploit_target.configuration Module

Overview

The *stix.exploit_target.configuration* module captures the software configuration that causes a vulnerability in a system.

Classes

class stix.exploit_target.configuration.**Configuration**(*description=None*, *short_description=None*, *cce_id=None*)
Bases: *stix.base.Entity*

Implementation of STIX Configuration.

Parameters

- **cce_id** (*optional*) – Common Configuration Enumeration value as a string
- **description** (*optional*) – A string description.
- **short_description** (*optional*) – A string short description.

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)
Adds a description to the `short_descriptions` collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

short_description
A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.exploit_target.vulnerability Module

Overview

The *stix.exploit_target.vulnerability* module captures the software version and specific bug that causes an exploitable condition.

Classes

class stix.exploit_target.vulnerability.**Vulnerability**(*title=None*, *description=None*, *short_description=None*)

Bases: *stix.base.Entity*

Implementation of STIX `Vulnerability`.

Parameters

- **title** (*optional*) – A string title.
- **description** (*optional*) – A string description.
- **short_description** (*optional*) – A string short description.

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)
Adds a description to the `short_descriptions` collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

short_description
A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

class stix.exploit_target.vulnerability.**CVSSVector**
Bases: *stix.base.Entity*

Common Vulnerabilit Scoring System object, representing its component measures

class stix.exploit_target.vulnerability.**AffectedSoftware**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

Version: 1.2.0.11

stix.exploit_target.weakness Module

Overview

The *stix.exploit_target.weakness* module captures a given software weakness as enumerated by CWE

Classes

class stix.exploit_target.weakness.**Weakness**(*description=None*, *cwe_id=None*)
Bases: *stix.base.Entity*

Implementation of STIX Weakness.

Parameters

- **cwe_id** (*optional*) – Common Weakness Enumeration value as a string
- **description** (*optional*) – A string description.

add_description(*description*)
Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

3.1.7 STIX Extensions

Modules located in the stix.extensions package

Version: 1.2.0.11

stix.extensions.identity.ciq_identity_3_0 Module

Classes

class stix.extensions.identity.ciq_identity_3_0.**CIQIdentity3_0Instance**(*roles=None*, *specification=None*)
Bases: *stix.common.identity.Identity*

class stix.extensions.identity.ciq_identity_3_0.**STIXCIQIdentity3_0**(*party_name=None*, *languages=None*, *addresses=None*, *organisation_info=None*, *electronic_address_identifiers=None*, *free_text_lines=None*, *contact_numbers=None*, *nationalities=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**Address**(*free_text_address=None*, *country=None*, *administrative_area=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**AdministrativeArea**(*name_elements=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**_BaseNameElement**(*value=None*)

Bases: *stix.base.Entity*

Do not instantiate directly: use PersonNameElement or OrganisationNameElement

class stix.extensions.identity.ciq_identity_3_0.**ContactNumber**(*contact_number_elements=None*, *communication_media_type=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**ContactNumberElement**(*value=None*, *type_=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**Country**(*name_elements=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**ElectronicAddressIdentifier**(*value=None*, *type_=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**FreeTextAddress**(*address_lines=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**FreeTextLine**(*value=None*, *type_=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**Language**(*value=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**NameElement**(*value=None*, *name_type=None*, *name_code=None*, *name_code_type=None*)

Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**NameLine**(*value=None*, *type_=None*)
Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**OrganisationInfo**(*industry_type=None*)
Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**OrganisationName**(*name_elements=None*, *subdivision_names=None*, *type_=None*)
Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**OrganisationNameElement**(*value=None*, *element_type=None*)
Bases: *stix.extensions.identity.ciq_identity_3_0._BaseNameElement*

class stix.extensions.identity.ciq_identity_3_0.**PartyName**(*name_lines=None*, *person_names=None*, *organisation_names=None*)
Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**PersonName**(*name_elements=None*, *type_=None*)
Bases: *stix.base.Entity*

class stix.extensions.identity.ciq_identity_3_0.**PersonNameElement**(*value=None*, *element_type=None*)
Bases: *stix.extensions.identity.ciq_identity_3_0._BaseNameElement*

class stix.extensions.identity.ciq_identity_3_0.**SubDivisionName**(*value=None*, *type_=None*)
Bases: *stix.base.Entity*

Constants

stix.extensions.identity.ciq_identity_3_0.**XML_NS_XPIL = 'urn:oasis:names:tc:ciq:xpil:3'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.identity.ciq_identity_3_0.**XML_NS_XNL = 'urn:oasis:names:tc:ciq:xnl:3'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.identity.ciq_identity_3_0.**XML_NS_XAL = 'urn:oasis:names:tc:ciq:xal:3'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.identity.ciq_identity_3_0.**XML_NS_STIX_EXT = 'http://stix.mitre.org/extensions/Identity#CI**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

Version: 1.2.0.11

stix.extensions.malware.maec_4_1_malware Module

Classes

class stix.extensions.malware.maec_4_1_malware.**MAECInstance**(*maec=None*)
Bases: *stix.ttp.malware_instance.MalwareInstance*

The MAECInstance object provides an extension to the MalwareInstanceType which imports and leverages the MAEC 4.1 schema for structured characterization of Malware.

This class extension is automatically registered by the MalwareInstanceFactory.

> **Warning:** Interacting with the `maec` field will fail if the maec library is not installed in your Python environment.

Version: 1.2.0.11

stix.extensions.marking.ais Module

STIX Extension for AIS Data Markings

Unlike the other marking extensions, the AIS marking extension is not loaded automatically, since AIS markings are not a part of the published STIX 1.x specifications. They are included in python-stix because they're common enough that it is not worth creating a separate package.

If you are writing code that needs to parse AIS markings, make sure that your program imports this module before beginning to parse any STIX documents:

```
import stix.extensions.marking.ais
```

Classes

class stix.extensions.marking.ais.**AISMarkingStructure**(*is_proprietary=None*, *not_proprietary=None*)
Bases: *stix.data_marking.MarkingStructure*

Functions

stix.extensions.marking.ais.**add_ais_marking**(*stix_package*, *proprietary*, *consent*, *color*, ***kwargs*)

This utility functions aids in the creation of an AIS marking and appends it to the provided STIX package.

Parameters

- **stix_package** – A stix.core.STIXPackage object.
- **proprietary** – True if marking uses IsProprietary, False for NotProprietary.
- **consent** – A string with one of the following values: "EVERYONE", "NONE" or "USG".
- **color** – A string that corresponds to TLP values: "WHITE", "GREEN" or "AMBER".
- ****kwargs** – Six required keyword arguments that are used to create a CIQ identity object. These are: country_name_code, country_name_code_type, admin_area_name_code, admin_area_name_code_type, organisation_name, industry_type.

Raises `ValueError` – When keyword arguments are missing. User did not supply correct values for: proprietary, color and consent.

Note: The following line is required to register the AIS extension:

```
>>> import stix.extensions.marking.ais
```

Any Markings under STIX Header will be removed. Please follow the guidelines for AIS.

The industry_type keyword argument accepts: a list of string based on defined sectors, a pipe-delimited string of sectors, or a single sector.

Examples

Applying AIS Markings

The STIX specification allows data markings to be applied to any combination of attributes and elements that can be described by XPath. That being said, the Automated Indicator Sharing (AIS) capability requires those markings controlled structure to select all nodes and attributes `//node() | //@*`. All required fields to create a valid AIS Markings are provided through the `add_ais_marking` function.

```
# python-stix imports
import stix
from stix.core import STIXPackage
from stix.extensions.marking.ais import (add_ais_marking,
                                         COMMUNICATIONS_SECTOR,
                                         INFORMATION_TECHNOLOGY_SECTOR)
from stix.indicator import Indicator

# Create new STIX Package
stix_package = STIXPackage()

# Create new Indicator
indicator = Indicator(title='My Indicator Example',
                      description='Example using AIS')

# Add indicator to our STIX Package
stix_package.add_indicator(indicator)

# Create AIS Marking with CIQ Identity and attach it to STIX Header.
add_ais_marking(stix_package, False, 'EVERYONE', 'GREEN',
    country_name_code='US',
    country_name_code_type='ISO 3166-1 alpha-2',
    admin_area_name_code='US-VA',
    admin_area_name_code_type='ISO 3166-2',
    organisation_name='Example Corporation',
    industry_type=[INFORMATION_TECHNOLOGY_SECTOR, COMMUNICATIONS_SECTOR]
)

# Print the XML.
print stix_package.to_xml()

# Print the JSON.
print stix_package.to_json()
```

This corresponds to the XML result:

```
<stix:STIX_Package
    xmlns:AIS="http://www.us-cert.gov/STIXMarkingStructure#AISConsentMarking-2"
    xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
    xmlns:xpil="urn:oasis:names:tc:ciq:xpil:3"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xal="urn:oasis:names:tc:ciq:xal:3"
    xmlns:xnl="urn:oasis:names:tc:ciq:xnl:3"
    xmlns:stix="http://stix.mitre.org/stix-1"
    xmlns:indicator="http://stix.mitre.org/Indicator-2"
    xmlns:marking="http://data-marking.mitre.org/Marking-1"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:stixCommon="http://stix.mitre.org/common-1"
    xmlns:example="http://example.com"
    xmlns:stix-ciqidentity="http://stix.mitre.org/extensions/Identity#CIQIdentity3.0-1"
    xmlns:xlink="http://www.w3.org/1999/xlink"
     id="example:Package-73ac199c-9dd8-4d8d-a37e-8ac40fc65ccf" version="1.2">
    <stix:STIX_Header>
        <stix:Handling>
            <marking:Marking>
                <marking:Controlled_Structure>//node() | //@*</marking:Controlled_Structure>
                <marking:Marking_Structure xsi:type='AIS:AISMarkingStructure'>
                    <AIS:Not_Proprietary CISA_Proprietary="false">
                        <AIS:AISConsent consent="EVERYONE"/>
                        <AIS:TLPMarking color="GREEN"/>
                    </AIS:Not_Proprietary>
                </marking:Marking_Structure>
                <marking:Information_Source>
                    <stixCommon:Identity xsi:type="stix-ciqidentity:CIQIdentity3.0InstanceType">
                        <stix-ciqidentity:Specification xmlns:stix-ciqidentity="http://stix.mitre.org
                            <xpil:PartyName xmlns:xpil="urn:oasis:names:tc:ciq:xpil:3">
                                <xnl:OrganisationName xmlns:xnl="urn:oasis:names:tc:ciq:xnl:3">
                                    <xnl:NameElement>Example Corporation</xnl:NameElement>
                                </xnl:OrganisationName>
                            </xpil:PartyName>
                            <xpil:Addresses xmlns:xpil="urn:oasis:names:tc:ciq:xpil:3">
                                <xpil:Address>
                                    <xal:Country xmlns:xal="urn:oasis:names:tc:ciq:xal:3">
                                        <xal:NameElement xal:NameCode="US" xal:NameCodeType="ISO 3166
                                    </xal:Country>
                                    <xal:AdministrativeArea xmlns:xal="urn:oasis:names:tc:ciq:xal:3">
                                        <xal:NameElement xal:NameCode="US-VA" xal:NameCodeType="ISO 3
                                    </xal:AdministrativeArea>
                                </xpil:Address>
                            </xpil:Addresses>
                            <xpil:OrganisationInfo xmlns:xpil="urn:oasis:names:tc:ciq:xpil:3" xpil:In
                        </stix-ciqidentity:Specification>
                    </stixCommon:Identity>
                </marking:Information_Source>
            </marking:Marking>
        </stix:Handling>
    </stix:STIX_Header>
    <stix:Indicators>
        <stix:Indicator id="example:indicator-eab71e49-e982-4874-a057-e75e51a76009" timestamp="2017-0
            <indicator:Title>My Indicator Example</indicator:Title>
            <indicator:Description>Example using AIS</indicator:Description>
        </stix:Indicator>
    </stix:Indicators>
</stix:STIX_Package>
```

The following corresponds to the JSON result:


```
{
    "stix_header": {
        "handling": [
            {
                "controlled_structure": "//node() | //@*",
                "information_source": {
                    "identity": {
                        "xsi:type": "stix-ciqidentity:CIQIdentity3.0InstanceType",
                        "specification": {
                            "organisation_info": {
                                "industry_type": "Information Technology Sector|Communications Sector
                            },
                            "party_name": {
                                "organisation_names": [
                                    {
                                        "name_elements": [
                                            {
                                                "value": "Example Corporation"
                                            }
                                        ]
                                    }
                                ]
                            },
                            "addresses": [
                                {
                                    "country": {
                                        "name_elements": [
                                            {
                                                "name_code_type": "ISO 3166-1 alpha-2",
                                                "name_code": "US"
                                            }
                                        ]
                                    },
                                    "administrative_area": {
                                        "name_elements": [
                                            {
                                                "name_code_type": "ISO 3166-2",
                                                "name_code": "US-VA"
                                            }
                                        ]
                                    }
                                }
                            ]
                        }
                    }
                },
                "marking_structures": [
                    {
                        "xsi:type": "AIS:AISMarkingStructure",
                        "not_proprietary": {
                            "tlp_marking": {
                                "color": "GREEN"
                            },
                            "ais_consent": {
                                "consent": "EVERYONE"
                            },
                            "cisa_proprietary": "false"
```

```
                        }
                    }
                ]
            }
        ]
    },
    "version": "1.2",
    "indicators": [
        {
            "description": "Example using AIS",
            "title": "My Indicator Example",
            "timestamp": "2017-10-02T14:26:57.510000+00:00",
            "id": "example:indicator-81466b8d-4efb-460f-ba13-b072420b9540"
        }
    ],
    "id": "example:Package-a8c8135d-18d8-4384-903f-71285a02346e"
}
```

Parsing AIS Markings

Using the same example used for Applying AIS Markings. This would be how a consumer of AIS would parse the data.

```
# python-stix imports
import stix
from stix.core import STIXPackage
import stix.extensions.marking.ais  # Register the AIS markings

# Parse STIX Package
stix_package = STIXPackage.from_xml("stix_input.xml")
# stix_package = STIXPackage.from_json("stix_input.json")

# Print all indicators
for indicator in stix_package.indicators:
    print(indicator)

# Extract markings from STIX Header
markings = stix_package.stix_header.handling

# Print all markings contained in the STIX Header
for marking in markings:
    print(marking)
    print(marking.marking_structures)
    print("----------MARKING CONTENT----------")
    ais_struct = marking.marking_structures[0]
    print("OBJ: %s" % ais_struct)
    print("NotProprietary OBJ: %s" % ais_struct.not_proprietary)
    print("CISA_Proprietary: %s" % ais_struct.not_proprietary.cisa_proprietary)
    print("Consent: %s" % ais_struct.not_proprietary.ais_consent.consent)
    print("TLP color: %s" % ais_struct.not_proprietary.tlp_marking.color)

    print("----------INFORMATION SOURCE----------")
    identity = marking.information_source.identity.specification
    print("OBJ: %s" % identity)
    print("Organization Name: %s" % identity.party_name.organisation_names[0].name_elements[0].value)
    print("Country: %s" % identity.addresses[0].country.name_elements[0].name_code)
    print("Country code type: %s" % identity.addresses[0].country.name_elements[0].name_code_type)
```

```
    print("Administrative area: %s" % identity.addresses[0].administrative_area.name_elements[0].name
    print("Administrative area code type: %s" % identity.addresses[0].administrative_area.name_elemen
    print("Industry Type: %s" % identity.organisation_info.industry_type)


>>> <stix.indicator.indicator.Indicator object at 0x...>
>>> <stix.data_marking.MarkingSpecification object at 0x...>
>>> [<stix.extensions.marking.ais.AISMarkingStructure object at 0x...>, ...]
>>> ----------MARKING CONTENT----------
>>> OBJ: <stix.extensions.marking.ais.AISMarkingStructure object at 0x...>
>>> NotProprietary OBJ: <stix.extensions.marking.ais.NotProprietary object at 0x...>
>>> CISA_Proprietary: False
>>> Consent: EVERYONE
>>> TLP color: GREEN
>>> ----------INFORMATION SOURCE----------
>>> OBJ: <stix.extensions.identity.ciq_identity_3_0.STIXCIQIdentity3_0 object at 0x...>
>>> Organization Name: Example Corporation
>>> Country: US
>>> Country code type: ISO 3166-1 alpha-2
>>> Administrative area: US-VA
>>> Administrative area code type: ISO 3166-2
>>> Industry Type: Information Technology Sector|Communications Sector
```

Constants

The following constants can be used for the `industry_type` keyword argument to `add_ais_marking`:

`stix.extensions.marking.ais.`**`CHEMICAL_SECTOR`** **= 'Chemical Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

`stix.extensions.marking.ais.`**`COMMERCIAL_FACILITIES_SECTOR`** **= 'Commercial Facilities Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

`stix.extensions.marking.ais.`**`COMMUNICATIONS_SECTOR`** **= 'Communications Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

`stix.extensions.marking.ais.`**`CRITICAL_MANUFACTURING_SECTOR`** **= 'Critical Manufacturing Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

`stix.extensions.marking.ais.`**`DAMS_SECTOR`** **= 'Dams Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

`stix.extensions.marking.ais.`**`DEFENSE_INDUSTRIAL_BASE_SECTOR`** **= 'Defense Industrial Base Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

`stix.extensions.marking.ais.`**`EMERGENCY_SERVICES_SECTOR`** **= 'Emergency Services Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**ENERGY_SECTOR = 'Energy Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**FINANCIAL_SERVICES_SECTOR = 'Financial Services Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**FOOD_AND_AGRICULTURE_SECTOR = 'Food and Agriculture Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**GOVERNMENT_FACILITIES_SECTOR = 'Government Facilities Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**HEALTH_CARE_AND_PUBLIC_HEALTH_SECTOR = 'Healthcare and Public Health Sec**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**INFORMATION_TECHNOLOGY_SECTOR = 'Information Technology Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**NUCLEAR_REACTORS_MATERIALS_AND_WASTE_SECTOR = 'Nuclear Reactors, Mate**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**OTHER = 'Other'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**TRANSPORTATION_SYSTEMS_SECTOR = 'Transportation Systems Sector'**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

stix.extensions.marking.ais.**WATER_AND_WASTEWATER_SYSTEMS_SECTOR = 'Water and Wastewater Systems Sec**
str(object='') -> string

Return a nice string representation of the object. If the argument is a string, the return value is the same object.

Version: 1.2.0.11

stix.extensions.marking.simple_marking Module

Classes

class stix.extensions.marking.simple_marking.**SimpleMarkingStructure**(*statement=None*)
Bases: *stix.data_marking.MarkingStructure*

Version: 1.2.0.11

stix.extensions.marking.terms_of_use_marking Module

Classes

class stix.extensions.marking.terms_of_use_marking.**TermsOfUseMarkingStructure**(*terms_of_use=None*)
Bases: *stix.data_marking.MarkingStructure*

Version: 1.2.0.11

stix.extensions.marking.tlp Module

Classes

class stix.extensions.marking.tlp.**TLPMarkingStructure**(*color=None*)
Bases: *stix.data_marking.MarkingStructure*

Version: 1.2.0.11

stix.extensions.structured_coa.generic_structured_coa Module

Classes

class stix.extensions.structured_coa.generic_structured_coa.**GenericStructuredCOA**(*id_=None*, *idref=None*)
Bases: stix.coa.structured_coa._BaseStructuredCOA

add_description(*description*)
Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.extensions.test_mechanism.generic_test_mechanism Module

Classes

class stix.extensions.test_mechanism.generic_test_mechanism.**GenericTestMechanism**(*id_=None*, *idref=None*)
Bases: *stix.indicator.test_mechanism._BaseTestMechanism*

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.extensions.test_mechanism.open_ioc_2010_test_mechanism Module

Classes

class stix.extensions.test_mechanism.open_ioc_2010_test_mechanism.**OpenIOCTestMechanism**(*id_=None*, *idref=None*)

Bases: *stix.indicator.test_mechanism._BaseTestMechanism*

Version: 1.2.0.11

stix.extensions.test_mechanism.snort_test_mechanism Module

Classes

class stix.extensions.test_mechanism.snort_test_mechanism.**SnortTestMechanism**(*id_=None*, *idref=None*)

Bases: *stix.indicator.test_mechanism._BaseTestMechanism*

Version: 1.2.0.11

stix.extensions.test_mechanism.yara_test_mechanism Module

Classes

class stix.extensions.test_mechanism.yara_test_mechanism.**YaraTestMechanism**(*id_=None*, *idref=None*)

Bases: *stix.indicator.test_mechanism._BaseTestMechanism*

3.1.8 STIX Incident

Modules located in the stix.incident package

Version: 1.2.0.11

stix.incident Module

Overview

The *stix.incident* module implements *Incident*.

Incidents are discrete instances of Indicators affecting an organization along with information discovered or decided during an incident response investigation.

Documentation Resources

- Incident Data Model

Classes

class stix.incident.**Incident**(*id_=None*, *idref=None*, *timestamp=None*, *title=None*, *description=None*, *short_description=None*)

Bases: stix.base.BaseCoreComponent

Implementation of the STIX Incident.

Parameters

- **id** (*optional*) – An identifier. If None, a value will be generated via mixbox.idgen.create_id(). If set, this will unset the idref property.
- **idref** (*optional*) – An identifier reference. If set this will unset the id_ property.
- **timestamp** (*optional*) – A timestamp value. Can be an instance of datetime.datetime or str.
- **description** – A description of the purpose or intent of this object.
- **short_description** – A short description of the intent or purpose of this object.
- **title** – The title of this object.

add_affected_asset(*v*)

Adds a *AffectedAsset* object to the affected_assets collection.

add_category(*category*)

Adds a *VocabString* object to the categories collection.

If *category* is a string, an attempt will be made to convert it into an instance of IncidentCategory.

add_coa_requested(*value*)

Adds a *COARequested* object to the coas_requested collection.

add_coa_taken(*value*)

Adds a *COATaken* object to the coas_taken collection.

add_coordinator(*value*)

Adds a *InformationSource* object to the coordinators collection.

add_description(*description*)

Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

add_discovery_method(*value*)
Adds a *VocabString* object to the `discovery_methods` collection.

If *value* is a string, an attempt will be made to convert it to an instance of `DiscoveryMethod`.

add_external_id(*value*)
Adds a *ExternalID* object to the `external_ids` collection.

add_intended_effect(*value*)
Adds a *Statement* object to the `intended_effects` collection.

If *value* is a string, an attempt will be made to convert it into an instance of *Statement*.

add_related_indicator(*value*)
Adds an Related Indicator to the `related_indicators` list property of this *Incident*.

The *indicator* parameter must be an instance of *RelatedIndicator* or `Indicator`.

If the *indicator* parameter is `None`, no item will be added to the `related_indicators` list property.

Calling this method is the same as calling `append()` on the `related_indicators` property.

See also:

The *RelatedIndicators* documentation.

Note: If the *indicator* parameter is not an instance of *RelatedIndicator* an attempt will be made to convert it to one.

Parameters **indicator** – An instance of `Indicator` or *RelatedIndicator*.

Raises `ValueError` – If the *indicator* parameter cannot be converted into an instance of *RelatedIndicator*

add_related_observable(*value*)
Adds a Related Observable to the `related_observables` list property of this *Incident*.

The *observable* parameter must be an instance of *RelatedObservable* or `Observable`.

If the *observable* parameter is `None`, no item will be added to the `related_observables` list property.

Calling this method is the same as calling `append()` on the `related_observables` property.

See also:

The *RelatedObservables* documentation.

Note: If the *observable* parameter is not an instance of *RelatedObservable* an attempt will be made to convert it to one.

Parameters **observable** – An instance of `Observable` or *RelatedObservable*.

Raises `ValueError` – If the *value* parameter cannot be converted into an instance of *RelatedObservable*

add_responder(*value*)
Adds a *InformationSource* object to the `responders` collection.

add_short_description(*description*)
Adds a description to the `short_descriptions` collection.

This is the same as calling "foo.short_descriptions.add(bar)".

add_victim(*victim*)
Adds a `IdentityType` value to the `victims` collection.

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

find(*id_*)
Searches the children of a `Entity` implementation for an object with an `id_` property that matches *id_*.

short_description
A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

to_dict()
Convert to a `dict`

Subclasses can override this function.

Returns Python dict with keys set from this Entity.

to_json()
Export an object as a JSON String.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's `_binding_class` with properties set from this Entity.

class stix.incident.**AttributedThreatActors**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class stix.incident.**LeveragedTTPs**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class stix.incident.**RelatedIndicators**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class stix.incident.**RelatedObservables**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class stix.incident.**RelatedIncidents**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

Version: 1.2.0.11

stix.incident.affected_asset Module

Classes

class stix.incident.affected_asset.**AffectedAsset**
Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

class stix.incident.affected_asset.**AssetType**(*value=None*, *count_affected=None*)
Bases: *stix.common.vocabs.VocabString*

is_plain()
Override VocabString.is_plain()

Version: 1.2.0.11

stix.incident.coa Module

Classes

class stix.incident.coa.**COATaken**(*course_of_action=None*)
Bases: *stix.base.Entity*

class stix.incident.coa.**COARequested**(*course_of_action=None*)
Bases: *stix.incident.coa.COATaken*

class stix.incident.coa.**COATime**(*start=None*, *end=None*)
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.incident.contributors Module

Classes

class stix.incident.contributors.**Contributors**(**args*)
Bases: *stix.base.EntityList*

Version: 1.2.0.11

stix.incident.direct_impact_summary Module

Classes

class stix.incident.direct_impact_summary.**DirectImpactSummary**
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.incident.external_id Module

Classes

class stix.incident.external_id.**ExternalID**(*value=None*, *source=None*)
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.incident.history Module

Classes

class stix.incident.history.**History**(**args*)
Bases: *stix.base.EntityList*

class stix.incident.history.**HistoryItem**
Bases: *stix.base.Entity*

class stix.incident.history.**JournalEntry**(*value=None*)
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.incident.impact_assessment Module

Classes

class stix.incident.impact_assessment.**ImpactAssessment**
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.incident.indirect_impact_summary Module

Classes

class stix.incident.indirect_impact_summary.**IndirectImpactSummary**
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.incident.loss_estimation Module

Classes

class stix.incident.loss_estimation.**LossEstimation**
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.incident.property_affected Module

Classes

class stix.incident.property_affected.**PropertyAffected**
Bases: *stix.base.Entity*

description_of_effect
A *StructuredTextList* object, containing descriptions about the purpose or intent of this object.

Iterating over this object will yield its contents sorted by their `ordinality` value.

Default Value: Empty *StructuredTextList* object.

Note: IF this is set to a value that is not an instance of *StructuredText*, an effort will ne made to convert it. If this is set to an iterable, any values contained that are not an instance of *StructuredText* will be be converted.

Returns An instance of *StructuredTextList*

class stix.incident.property_affected.**NonPublicDataCompromised**(*value=None*, *data_encrypted=None*)
Bases: *stix.common.vocabs.VocabString*

Version: 1.2.0.11

stix.incident.time Module

Classes

class stix.incident.time.**Time**(*first_malicious_action=None*, *initial_compromise=None*, *first_data_exfiltration=None*, *incident_discovery=None*, *incident_opened=None*, *containment_achieved=None*, *restoration_achieved=None*, *incident_reported=None*, *incident_closed=None*)

Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.incident.total_loss_estimation Module

Classes

class stix.incident.total_loss_estimation.**TotalLossEstimation**

Bases: *stix.base.Entity*

3.1.9 STIX Indicator

Modules located in the stix.indicator package

Version: 1.2.0.11

stix.indicator.indicator Module

Overview

The *stix.indicator.indicator* module implements IndicatorType STIX Language construct. The IndicatorType characterizes a cyber threat indicator made up of a pattern identifying certain observable conditions as well as contextual information about the patterns meaning, how and when it should be acted on, etc.

Documentation Resources

- Indicator Data Model
- Indicator Idioms

Classes

class stix.indicator.indicator.**Indicator**(*id_=None*, *idref=None*, *timestamp=None*, *title=None*, *description=None*, *short_description=None*)

Bases: stix.base.BaseCoreComponent

Implementation of the STIX Indicator.

Parameters

- **id** (*optional*) – An identifier. If None, a value will be generated via mixbox.idgen.create_id(). If set, this will unset the idref property.
- **idref** (*optional*) – An identifier reference. If set this will unset the id_ property.

- **title** (*optional*) – A string title.
- **timestamp** (*optional*) – A timestamp value. Can be an instance of `datetime.datetime` or `str`.
- **description** (*optional*) – A string description.
- **short_description** (*optional*) – A string short description.

add_alternative_id(*value*)
Adds an alternative id to the `alternative_id` list property.

Note: If `None` is passed in no value is added to the `alternative_id` list property.

Parameters **value** – An identifier value.

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

add_indicated_ttp(*v*)
Adds an Indicated TTP to the `indicated_ttps` list property of this *Indicator*.

The *v* parameter must be an instance of *stix.common.related.RelatedTTP* or *stix.ttp.TTP*.

If the *v* parameter is `None`, no item wil be added to the `indicated_ttps` list property.

Note: If the *v* parameter is not an instance of *stix.common.related.RelatedTTP* an attempt will be made to convert it to one.

Parameters **v** – An instance of *stix.common.related.RelatedTTP* or *stix.ttp.TTP*.

Raises `ValueError` – If the *v* parameter cannot be converted into an instance of *stix.common.related.RelatedTTP*

add_indicator_type(*value*)
Adds a value to the `indicator_types` list property.

The *value* parameter can be a `str` or an instance of *stix.common.vocabs.VocabString*.

Note: If the *value* parameter is a `str` instance, an attempt will be made to convert it into an instance of *stix.common.vocabs.IndicatorType*

Parameters **value** – An instance of *stix.common.vocabs.VocabString* or `str`.

Raises `ValueError` – If the *value* param is a `str` instance that cannot be converted into an instance of *stix.common.vocabs.IndicatorType*.

add_kill_chain_phase(*value*)
Add a new Kill Chain Phase reference to this Indicator.

Parameters **value** – a *stix.common.kill_chains.KillChainPhase* or a *str* representing the phase_id of. Note that you if you are defining a custom Kill Chain, you need to add it to the STIX package separately.

add_object(*object_*)

Adds a python-cybox Object instance to the `observables` list property.

This is the same as calling `indicator.add_observable(object_)`.

Note: If the *object* param is not an instance of `cybox.core.Object` an attempt will be made to to convert it into one before wrapping it in an `cybox.core.Observable` layer.

Parameters **object** – An instance of `cybox.core.Object` or an object that can be converted into an instance of `cybox.core.Observable`

Raises `ValueError` – if the *object_* param cannot be converted to an instance of `cybox.core.Observable`.

add_observable(*observable*)

Adds an observable to the `observable` property of the *Indicator*.

If the *observable* parameter is `None`, no item will be added to the `observable` property.

Note: The STIX Language dictates that an *Indicator* can have only one `Observable` under it. Because of this, when a user adds another `Observable` a new, empty `Observable` will be crated and append the existing and new `observable` using the `ObservableComposition` property. To access the top level `Observable` can be achieved by the `observable` property .By default, the `operator` of the composition layer will be set to `"OR"`. The `operator` value can be changed via the `observable_composition_operator` property.

Setting `observable` or `observables` with re-initialize the property and lose all `Observable` in the composition layer.

Parameters **observable** – An instance of `cybox.core.Observable` or an object type that can be converted into one.

Raises `ValueError` – If the *observable* param cannot be converted into an instance of `cybox.core.Observable`.

add_related_campaign(*value*)

Adds a Related Campaign to this Indicator.

The *value* parameter must be an instance of `RelatedCampaignRef` or `CampaignRef`.

If the *value* parameter is `None`, no item wil be added to the `related_campaigns` collection.

Calling this method is the same as calling `append()` on the `related_campaigns` property.

See also:

The `RelatedCampaignRef` documentation.

Note: If the *value* parameter is not an instance of `RelatedCampaignRef` an attempt will be made to convert it to one.

Parameters **value** – An instance of `RelatedCampaignRef` or *Campaign*.

Raises `ValueError` – If the *value* parameter cannot be converted into an instance of `RelatedCampaignRef`

add_related_indicator(*indicator*)

Adds an Related Indicator to the `related_indicators` list property of this *Indicator*.

The *indicator* parameter must be an instance of *stix.common.related.RelatedIndicator* or *Indicator*.

If the *indicator* parameter is `None`, no item wil be added to the `related_indicators` list property.

Calling this method is the same as calling `append()` on the `related_indicators` proeprty.

See also:

The *RelatedIndicators* documentation.

Note: If the *tm* parameter is not an instance of *stix.common.related.RelatedIndicator* an attempt will be made to convert it to one.

Parameters **indicator** – An instance of *Indicator* or *stix.common.related.RelatedIndicator*.

Raises `ValueError` – If the *indicator* parameter cannot be converted into an instance of *stix.common.related.RelatedIndicator*

add_short_description(*description*)

Adds a description to the `short_descriptions` collection.

This is the same as calling "foo.short_descriptions.add(bar)".

add_test_mechanism(*tm*)

Adds an Test Mechanism to the `test_mechanisms` list property of this *Indicator*.

The *tm* parameter must be an instance of a *stix.indicator.test_mechanism._BaseTestMechanism* implementation.

If the *tm* parameter is `None`, no item will be added to the `test_mechanisms` list property.

See also:

Test Mechanism implementations are found under the `stix.extensions.test_mechanism` package.

Parameters **tm** – An instance of a *stix.indicator.test_mechanism._BaseTestMechanism* implementation.

Raises `ValueError` – If the *tm* parameter is not an instance of *stix.indicator.test_mechanism._BaseTestMechanism*

add_valid_time_position(*value*)

Adds an valid time position to the `valid_time_positions` property list.

If *value* is `None`, no item is added to the `value_time_positions` list.

Parameters **value** – An instance of *stix.indicator.valid_time.ValidTime*.

Raises `ValueError` – If the *value* argument is not an instance of *stix.indicator.valid_time.ValidTime*.

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

find(*id_*)
Searches the children of a `Entity` implementation for an object with an `id_` property that matches *id_*.

get_produced_time()
Gets the produced time for this *Indicator*.

This is the same as calling `produced_time = indicator.producer.time.produced_time`.

Returns `None` or an instance of `cybox.common.DateTimeWithPrecision`.

get_received_time()
Gets the received time for this *Indicator*.

This is the same as calling `received_time = indicator.producer.time.received_time`.

Returns `None` or an instance of `cybox.common.DateTimeWithPrecision`.

observables
A list of `cybox.core.Observable` instances. This can be set to a single object instance or a list of objects.

Note: If only one Observable is set, this property will return a list with the `observable` property.

If multiple `cybox.core.Observable` this property will return Observables under the `cybox.core.ObservableComposition`.

Access to the top level `cybox.core.Observable` is made via `observable` property.

Default Value: Empty `list`.

Returns A `list` of `cybox.core.Observable` instances.

set_produced_time(*produced_time*)
Sets the `produced_time` property of the `producer` property instance fo *produced_time*.

This is the same as calling `indicator.producer.time.produced_time = produced_time`.

The *produced_time* parameter must be an instance of `str`, `datetime.datetime`, or `cybox.common.DateTimeWithPrecision`.

Note: If *produced_time* is a `str` or `datetime.datetime` instance an attempt will be made to convert it into an instance of `cybox.common.DateTimeWithPrecision`.

Parameters **produced_time** – An instance of `str`, `datetime.datetime`, or `cybox.common.DateTimeWithPrecision`.

set_producer_identity(*identity*)
Sets the name of the producer of this indicator.

This is the same as calling `indicator.producer.identity.name = identity`.

If the `producer` property is `None`, it will be initialized to an instance of *stix.common.information_source.InformationSource*.

If the `identity` property of the `producer` instance is `None`, it will be initialized to an instance of *stix.common.identity.Identity*.

Note: if the *identity* parameter is not an instance *stix.common.identity.Identity* an attempt will be made to convert it to one.

Parameters **identity** – An instance of `str` or `stix.common.identity.Identity`.

set_received_time(*received_time*)
Sets the received time for this *Indicator*.

This is the same as calling `indicator.producer.time.produced_time = produced_time`.

The *received_time* parameter must be an instance of `str`, `datetime.datetime`, or `cybox.common.DateTimeWithPrecision`.

Parameters **received_time** – An instance of `str`, `datetime.datetime`, or `cybox.common.DateTimeWithPrecision`.

Note: If *received_time* is a `str` or `datetime.datetime` instance an attempt will be made to convert it into an instance of `cybox.common.DateTimeWithPrecision`.

---

short_description
A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

to_dict()
Convert to a `dict`

Subclasses can override this function.

Returns Python dict with keys set from this Entity.

to_json()
Export an object as a JSON String.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's `_binding_class` with properties set from this Entity.

class `stix.indicator.indicator.`**CompositeIndicatorExpression**(*operator='OR', *args*)
Bases: `mixbox.entities.EntityList`

Implementation of the STIX `CompositeIndicatorExpressionType`.

The `CompositeIndicatorExpression` class implements methods found on `collections.MutableSequence` and as such can be interacted with as a `list` (e.g., `append()`).

Note: The `append()` method can only accept instances of *`Indicator`*.

Examples

Add a *`Indicator`* instance to an instance of *`CompositeIndicatorExpression`*:

```
>>> i = Indicator()
>>> comp = CompositeIndicatorExpression()
>>> comp.append(i)
```

Create a *`CompositeIndicatorExpression`* from a list of *`Indicator`* instances using `*args` argument list:

```
>>> list_indicators = [Indicator() for i in xrange(10)]
>>> comp = CompositeIndicatorExpression(CompositeIndicatorExpression.OP_OR, *list_indicators)
>>> len(comp)
10
```

Parameters

- **operator** (*str, optional*) – The logical composition operator. Must be `"AND"` or `"OR"`.
- ***args** – Variable length argument list of *`Indicator`* instances.

OP_AND
str

String `"AND"`

OP_OR
str

String `"OR"`

OPERATORS
tuple

Tuple of allowed `operator` values.

operator
str

The logical composition operator. Must be `"AND"` or `"OR"`.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's _binding_class with properties set from this Entity.

class stix.indicator.indicator.**RelatedIndicators**(*related_indicators=None*, *scope=None*)
Bases: *stix.common.related.GenericRelationshipList*

The RelatedIndicators class provides functionality for adding *stix.common.related.RelatedIndicator* instances to an *Indicator* instance.

The RelatedIndicators class implements methods found on collections.MutableSequence and as such can be interacted with as a list (e.g., append()).

The append() method can accept instances of *stix.common.related.RelatedIndicator* or *Indicator* as an argument.

Note: Calling append() with an instance of *stix.coa.CourseOfAction* will wrap that instance in a *stix.common.related.RelatedIndicator* layer, with item set to the *Indicator* instance.

Examples

Append an instance of *Indicator* to the Indicator.related_indicators property. The instance of *Indicator* will be wrapped in an instance of *stix.common.related.RelatedIndicator*:

```
>>> related = Indicator()
>>> parent_indicator = Indicator()
>>> parent_indicator.related_indicators.append(related)
>>> print(type(indicator.related_indicators[0]))
<class 'stix.common.related.RelatedIndicator'>
```

Iterate over the related_indicators property of an *Indicator* instance and print the ids of each underlying Indicator` instance:

```
>>> for related in indicator.related_indicators:
>>>     print(related.item.id_)
```

Parameters

- **related_indicators** (*list, optional*) – A list of *Indicator* or *stix.common.related.RelatedIndicator* instances.
- **scope** (*str, optional*) – The scope of the items. Can be set to "inclusive" or "exclusive". See *stix.common.related.GenericRelationshipList* documentation for more information.

scope
str

The scope of the items. Can be set to "inclusive" or "exclusive". See *stix.common.related.GenericRelationshipList* documentation for more information.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's _binding_class with properties set from this Entity.

class stix.indicator.indicator.**RelatedCampaignRefs**(*related_campaign_refs=None*, *scope=None*)

Bases: *stix.common.related.GenericRelationshipList*

to_obj(*ns_info=None*)

Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's _binding_class with properties set from this Entity.

class stix.indicator.indicator.**SuggestedCOAs**(*suggested_coas=None*, *scope=None*)

Bases: *stix.common.related.GenericRelationshipList*

The SuggestedCOAs class provides functionality for adding *stix.common.related.RelatedCOA* instances to an *Indicator* instance.

The SuggestedCOAs class implements methods found on collections.MutableSequence and as such can be interacted with as a list (e.g., append()).

The append() method can accept instances of *stix.common.related.RelatedCOA* or *stix.coa.CourseOfAction* as an argument.

Note: Calling append() with an instance of *stix.coa.CourseOfAction* will wrap that instance in a *stix.common.related.RelatedCOA* layer, with the item set to the *stix.coa.CourseOfAction* instance.

Examples

Append an instance of *stix.coa.CourseOfAction* to the Indicator.suggested_coas property. The instance of *stix.coa.CourseOfAction* will be wrapped in an instance of *stix.common.related.RelatedCOA*.

```
>>> coa = CourseOfAction()
>>> indicator = Indicator()
>>> indicator.suggested_coas.append(coa)
>>> print(type(indicator.suggested_coas[0]))
<class 'stix.common.related.RelatedCOA'>
```

Iterate over the suggested_coas property of an *Indicator* instance and print the ids of each underlying *stix.coa.CourseOfAction* instance.

```
>>> for related_coa in indicator.suggested_coas:
>>>     print(related_coa.item.id_)
```

Parameters

- **suggested_coas** (*list*) – A list of *stix.coa.CourseOfAction* or *stix.common.related.RelatedCOA* instances.
- **scope** (*str*) – The scope of the items. Can be set to "inclusive" or "exclusive". See *stix.common.related.GenericRelationshipList* documentation for more information.

scope

str

The scope of the items. Can be set to "inclusive" or "exclusive". See *stix.common.related.GenericRelationshipList* documentation for more information.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's _binding_class with properties set from this Entity.

class stix.indicator.indicator.**IndicatorTypes**(**args*)
Bases: stix.base.TypedList

A *stix.common.vocabs.VocabString* collection which defaults to *stix.common.vocabs.IndicatorType*. This class implements methods found on collections.MutableSequence and as such can be interacted with like a list.

Note: The append() method can accept str or *stix.common.vocabs.VocabString* instances. If a str instance is passed in, an attempt will be made to convert it to an instance of *stix.common.vocabs.IndicatorType*.

Examples

Add an instance of *stix.common.vocabs.IndicatorType*:

```
>>> from stix.common.vocabs import IndicatorType
>>> itypes = IndicatorTypes()
>>> type_ = IndicatorType(IndicatorType.TERM_IP_WATCHLIST)
>>> itypes.append(type_)
>>> print(len(itypes))
1
```

Add a string value:

```
>>> from stix.common.vocabs import IndicatorType
>>> itypes = IndicatorTypes()
>>> type(IndicatorType.TERM_IP_WATCHLIST)
<type 'str'>
>>> itypes.append(IndicatorType.TERM_IP_WATCHLIST)
>>> print(len(itypes))
1
```

Parameters ***args** – Variable length argument list of strings or *stix.common.vocabs.VocabString* instances.

Version: 1.2.0.11

stix.indicator.sightings Module

Classes

class stix.indicator.sightings.**Sighting**(*timestamp=None*, *timestamp_precision=None*, *description=None*)
Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

class stix.indicator.sightings.**Sightings**(*sightings_count=None*, **args*)
Bases: *stix.base.EntityList*

class stix.indicator.sightings.**RelatedObservables**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

Version: 1.2.0.11

stix.indicator.test_mechanism Module

Classes

class stix.indicator.test_mechanism.**_BaseTestMechanism**(*id_=None*, *idref=None*)
Bases: *stix.base.Entity*

Functions

stix.indicator.test_mechanism.**add_extension**(*cls*)
Registers a stix.Entity class as an implementation of an xml type.

Classes must have an `_XSI_TYPE` class attributes to be registered. The value of this attribute must be a valid xsi:type.

Note: This was designed for internal use.

Version: 1.2.0.11

stix.indicator.valid_time Module

Classes

class stix.indicator.valid_time.**ValidTime**(*start_time=None*, *end_time=None*)
Bases: mixbox.entities.Entity

3.1.10 STIX Report

Modules located in the stix.report package

Version: 1.2.0.11

stix.report Module

Overview

The *stix.report* module implements *Report*.

A Report defines a contextual wrapper for a grouping of STIX content.

Documentation Resources

- Report Data Model

Classes

class stix.report.**Report**(*id_=None*, *idref=None*, *timestamp=None*, *header=None*, *courses_of_action=None*, *exploit_targets=None*, *indicators=None*, *observables=None*, *incidents=None*, *threat_actors=None*, *ttps=None*, *campaigns=None*, *related_reports=None*)

Bases: *stix.base.Entity*

A STIX Report Object.

Parameters

- **id** (*optional*) – An identifier. If None, a value will be generated via mixbox.idgen.create_id(). If set, this will unset the idref property.
- **idref** (*optional*) – An identifier reference. If set this will unset the id_ property.
- **timestamp** (*optional*) – A timestamp value. Can be an instance of datetime.datetime or str.
- **header** – A Report *Header* object.
- **campaigns** – A collection of *Campaign* objects.
- **courses_of_action** – A collection of *CourseOfAction* objects.
- **exploit_targets** – A collection of *ExploitTarget* objects.
- **incidents** – A collection of *Incident* objects.
- **indicators** – A collection of *Indicator* objects.
- **threat_actors** – A collection of *ThreatActor* objects.
- **ttps** – A collection of *TTP* objects.
- **related_reports** – A collection of *RelatedReport* objects.

add(*entity*)

Adds *entity* to a top-level collection. For example, if *entity* is an Indicator object, the *entity* will be added to the indicators top-level collection.

add_campaign(*campaign*)
Adds a `Campaign` object to the `campaigns` collection.

add_course_of_action(*course_of_action*)
Adds an *CourseOfAction* object to the `courses_of_action` collection.

add_exploit_target(*exploit_target*)
Adds an *ExploitTarget* object to the `exploit_targets` collection.

add_incident(*incident*)
Adds an *Incident* object to the `incidents` collection.

add_indicator(*indicator*)
Adds an *Indicator* object to the `indicators` collection.

add_observable(*observable*)
Adds an `Observable` object to the `observables` collection.

If *observable* is not an `Observable` instance, an effort will be made to convert it to one.

add_related_report(*related_report*)
Adds an *RelatedReport* object to the `related_reports` collection.

add_threat_actor(*threat_actor*)
Adds an *ThreatActor* object to the `threat_actors` collection.

add_ttp(*ttp*)
Adds an *TTP* object to the `ttps` collection.

Version: 1.2.0.11

stix.report.header Module

Classes

class stix.report.header.**Header**(*title=None*, *description=None*, *short_description=None*, *handling=None*, *intents=None*, *information_source=None*)

Bases: *stix.base.Entity*

The Report Header.

Parameters

- **handling** – The data marking section of the Header.
- **information_source** – The *InformationSource* section of the Header.
- **intents** – A collection of *VocabString* defining the intent of the parent *Report*.
- **description** – A description of the intent or purpose of the parent *Report*.
- **short_description** – A short description of the intent or purpose of the parent *Report*.
- **title** – The title of the *Report*.

title
The title of the parent *Report*.

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

add_intent(*intent*)
Adds *VocabString* object to the `intents` collection.

If the input is not an instance of *VocabString*, an effort will be made to convert it into an instance of `ReportIntent`.

add_short_description(*description*)
Adds a description to the `short_descriptions` collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

short_description
A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

3.1.11 STIX Threat Actor

Modules located in the stix.threat_actor package

Version: 1.2.0.11

stix.threat_actor Module

Overview

The *stix.threat_actor* module implements *ThreatActor*.

ThreatActors are characterizations of malicious actors (or adversaries) representing a cyber attack threat including presumed intent and historically observed behavior.

Documentation Resources

- Threat Actor Data Model

Classes

class stix.threat_actor.**ThreatActor**(*id_=None*, *idref=None*, *timestamp=None*, *title=None*, *description=None*, *short_description=None*)

Bases: stix.base.BaseCoreComponent

Implementation of the STIX Threat Actor.

Parameters

- **id** (*optional*) – An identifier. If None, a value will be generated via mixbox.idgen.create_id(). If set, this will unset the idref property.
- **idref** (*optional*) – An identifier reference. If set this will unset the id_ property.
- **timestamp** (*optional*) – A timestamp value. Can be an instance of datetime.datetime or str.
- **description** – A description of the purpose or intent of this object.
- **short_description** – A short description of the intent or purpose of this object.
- **title** – The title of this object.

add_description(*description*)
Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

add_intended_effect(*value*)
Adds a *Statement* object to the intended_effects collection.

If *value* is a string, an attempt will be made to convert it into an instance of *Statement*.

add_motivation(*value*)
Adds a Motivation object to the motivations collection.

add_planning_and_operational_support(*value*)
Adds a *VocabString* object to the planning_and_operational_supports collection.

If *value* is a string, an attempt will be made to convert it to an instance of PlanningAndOperationalSupport.

add_short_description(*description*)
Adds a description to the short_descriptions collection.

This is the same as calling "foo.short_descriptions.add(bar)".

add_sophistication(*value*)
Adds a *VocabString* object to the sophistications collection.

If *value* is a string, an attempt will be made to convert it to an instance of ThreatActorSophistication.

add_type(*value*)
Adds a *VocabString* object to the types collection.

If set to a string, an attempt will be made to convert it into an instance of ThreatActorType.

description
A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

find(*id_*)
Searches the children of a `Entity` implementation for an object with an `id_` property that matches *id_*.

short_description
A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

to_dict()
Convert to a `dict`

Subclasses can override this function.

Returns Python dict with keys set from this Entity.

to_json()
Export an object as a JSON String.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's `_binding_class` with properties set from this Entity.

class `stix.threat_actor.`**AssociatedActors**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class `stix.threat_actor.`**AssociatedCampaigns**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

class `stix.threat_actor.`**ObservedTTPs**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

3.1.12 STIX Tactics, Techniques, and Procedures (TTP)

Modules located in the stix.ttp package

Version: 1.2.0.11

`stix.ttp` Module

Overview

The *stix.ttp* module implements *TTP*.

TTPs are representations of the behavior or modus operandi of cyber adversaries.

Documentation Resources

- TTP Data Model

Classes

class stix.ttp.**TTP**(*id_=None*, *idref=None*, *timestamp=None*, *title=None*, *description=None*, *short_description=None*)

Bases: stix.base.BaseCoreComponent

Implementation of the STIX TTP.

Parameters

- **id** (*optional*) – An identifier. If None, a value will be generated via mixbox.idgen.create_id(). If set, this will unset the idref property.
- **idref** (*optional*) – An identifier reference. If set this will unset the id_ property.
- **timestamp** (*optional*) – A timestamp value. Can be an instance of datetime.datetime or str.
- **description** – A description of the purpose or intent of this object.
- **short_description** – A short description of the intent or purpose of this object.
- **title** – The title of this object.

add_description(*description*)

Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

add_intended_effect(*value*)

Adds a *Statement* object to the intended_effects collection.

If *value* is a string, an attempt will be made to convert it into an instance of *Statement*.

add_kill_chain_phase(*value*)

Adds a *KillChainPhaseReference* to the kill_chain_phases collection.

Parameters **value** – A *KillChainPhase*, *KillChainPhaseReference* or a str representing the phase_id of. Note that you if you are defining a custom Kill Chain, you need to add it to the STIX package separately.

add_related_package(*value*)

Adds a *RelatedPackageRef* object to the related_packages collection.

Parameters **value** – A *RelatedPackageRef* or a *STIXPackage* object.

add_short_description(*description*)

Adds a description to the short_descriptions collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description

A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

find(*id_*)
Searches the children of a `Entity` implementation for an object with an `id_` property that matches *id_*.

short_description
A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

to_dict()
Convert to a `dict`

Subclasses can override this function.

Returns Python dict with keys set from this Entity.

to_json()
Export an object as a JSON String.

to_obj(*ns_info=None*)
Convert to a GenerateDS binding object.

Subclasses can override this function.

Returns An instance of this Entity's `_binding_class` with properties set from this Entity.

Version: 1.2.0.11

stix.ttp.attack_pattern Module

Classes

class stix.ttp.attack_pattern.**AttackPattern**(*id_=None*, *idref=None*, *title=None*, *description=None*, *short_description=None*)
Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)
Adds a description to the `short_descriptions` collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

short_description
A single short description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.ttp.behavior Module

Classes

class stix.ttp.behavior.**Behavior**(*malware_instances=None*, *attack_patterns=None*, *exploits=None*)
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.ttp.exploit Module

Classes

class stix.ttp.exploit.**Exploit**(*id_=None*, *idref=None*, *title=None*, *description=None*, *short_description=None*)
Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the `descriptions` collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)
Adds a description to the `short_descriptions` collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: `None`

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

short_description
A single short description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.ttp.exploit_targets Module

Classes

class stix.ttp.exploit_targets.**ExploitTargets**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

Version: 1.2.0.11

stix.ttp.infrastructure Module

Classes

class stix.ttp.infrastructure.**Infrastructure**(*id_=None*, *idref=None*, *title=None*, *description=None*, *short_description=None*)
Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)
Adds a description to the short_descriptions collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

short_description
A single short description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Version: 1.2.0.11

stix.ttp.malware_instance Module

Classes

class stix.ttp.malware_instance.**MalwareInstance**(*id_=None*, *idref=None*, *title=None*, *description=None*, *short_description=None*)

Bases: *stix.base.Entity*

add_description(*description*)
Adds a description to the descriptions collection.

This is the same as calling "foo.descriptions.add(bar)".

add_short_description(*description*)
Adds a description to the short_descriptions collection.

This is the same as calling "foo.short_descriptions.add(bar)".

description
A single description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

short_description
A single short description about the contents or purpose of this object.

Default Value: None

Note: If this object has more than one short description set, this will return the description with the lowest ordinality value.

Returns An instance of *StructuredText*

Functions

stix.ttp.malware_instance.**add_extension**(*cls*)
Registers a stix.Entity class as an implementation of an xml type.

Classes must have an _XSI_TYPE class attributes to be registered. The value of this attribute must be a valid xsi:type.

Note: This was designed for internal use.

Version: 1.2.0.11

stix.ttp.related_ttps Module

Classes

class stix.ttp.related_ttps.**RelatedTTPs**(*scope=None*, **args*)
Bases: *stix.common.related.GenericRelationshipList*

Version: 1.2.0.11

stix.ttp.resource Module

Classes

class stix.ttp.resource.**Resource**(*tools=None*, *infrastructure=None*, *personas=None*)
Bases: *stix.base.Entity*

Version: 1.2.0.11

stix.ttp.victim_targeting Module

Classes

class stix.ttp.victim_targeting.**VictimTargeting**
Bases: *stix.base.Entity*

3.1.13 STIX Utils

Modules located in the stix.utils package

Version: 1.2.0.11

stix.utils Module

Functions

stix.utils.**is_cdata**(*text*)
Returns True if *text* contains a CDATA block.

Example

```
>>> is_cdata("<![CDATA[Foo]]>")
True
>>> is_cdata("NOPE")
False
```

stix.utils.**strip_cdata**(*text*)
Removes all CDATA blocks from *text* if it contains them.

Note: If the function contains escaped XML characters outside of a CDATA block, they will be unescaped.

Parameters **string containing one or more CDATA blocks.** (*A*) –

Returns An XML unescaped string with CDATA block qualifiers removed.

stix.utils.**cdata**(*text*)
Wraps the input *text* in a <![CDATA[ ]]> block.

If the text contains CDATA sections already, they are stripped and replaced by the application of an outer-most CDATA block.

Parameters **text** – A string to wrap in a CDATA block.

Returns The *text* value wrapped in <![CDATA[]]>

stix.utils.**raise_warnings**(*func*)
Function decorator that causes all Python warnings to be raised as exceptions in the wrapped function.

Example

```
>>> @raise_warnings
>>> def foo():
>>>     warnings.warn("this will raise an exception")
```

stix.utils.**silence_warnings**(*func*)
Function decorator that silences/ignores all Python warnings in the wrapped function.

Example

```
>>> @silence_warnings
>>> def foo():
>>>     warnings.warn("this will not appear")
```

stix.utils.**xml_bool**(*value*)
Returns True if *value* is an acceptable xs:boolean True value. Returns False if *value* is an acceptable xs:boolean False value. If *value* is None, this function will return None.

Version: 1.2.0.11

stix.utils.dates Module

Functions

stix.utils.dates.**parse_value**(*value*)
Attempts to parse *value* into an instance of `datetime.datetime`. If *value* is `None`, this function will return `None`.

Parameters **value** – A timestamp. This can be a string or datetime.datetime value.

stix.utils.dates.**serialize_value**(*value*)
Attempts to convert *value* into an ISO8601-compliant timestamp string. If *value* is `None`, `None` will be returned.

Parameters **value** – A datetime.datetime value.

Returns An ISO8601 formatted timestamp string.

stix.utils.dates.**parse_date**(*value*)
Attempts to parse *value* into an instance of `datetime.date`. If *value* is `None`, this function will return `None`.

Parameters **value** – A timestamp. This can be a string, datetime.date, or datetime.datetime value.

stix.utils.dates.**serialize_value**(*value*)
Attempts to convert *value* into an ISO8601-compliant timestamp string. If *value* is `None`, `None` will be returned.

Parameters **value** – A datetime.datetime value.

Returns An ISO8601 formatted timestamp string.

stix.utils.dates.**now**()
Returns the current UTC `datetime.datetime` timestamp.

Version: 1.2.0.11

stix.utils.nsparser Module

Constants

stix.utils.nsparser.**NS_CAMPAIGN_OBJECT = Namespace(name='http://stix.mitre.org/Campaign-1', prefix='campaig**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_CAPEC_OBJECT = Namespace(name='http://capec.mitre.org/capec-2', prefix='capec', schema_**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_CIQIDENTITY_OBJECT = Namespace(name='http://stix.mitre.org/extensions/Identity#CIQId**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_COA_OBJECT = Namespace(name='http://stix.mitre.org/CourseOfAction-1', prefix='coa', sche**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_CVRF_OBJECT = Namespace(name='http://www.icasi.org/CVRF/schema/cvrf/1.1', prefix='cvr**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace

URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_ET_OBJECT = Namespace(name='http://stix.mitre.org/ExploitTarget-1', prefix='et', schema_lo**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_GENERICSTRUCTUREDCOA_OBJECT = Namespace(name='http://stix.mitre.org/extensions/Str**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_GENERICTM_OBJECT = Namespace(name='http://stix.mitre.org/extensions/TestMechanism#G**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_INCIDENT_OBJECT = Namespace(name='http://stix.mitre.org/Incident-1', prefix='incident', s**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_INDICATOR_OBJECT = Namespace(name='http://stix.mitre.org/Indicator-2', prefix='indicato**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_IOC_OBJECT = Namespace(name='http://schemas.mandiant.com/2010/ioc', prefix='ioc', schem**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_IOCTR_OBJECT = Namespace(name='http://schemas.mandiant.com/2010/ioc/TR/', prefix='ioc**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_MARKING_OBJECT = Namespace(name='http://data-marking.mitre.org/Marking-1', prefix='m**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_OVALDEF_OBJECT = Namespace(name='http://oval.mitre.org/XMLSchema/oval-definitions-5'**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_OVALVAR_OBJECT = Namespace(name='http://oval.mitre.org/XMLSchema/oval-variables-5',**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_REPORT_OBJECT = Namespace(name='http://stix.mitre.org/Report-1', prefix='report', schema**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_SIMPLEMARKING_OBJECT = Namespace(name='http://data-marking.mitre.org/extensions/Ma**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace

URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_SNORTTM_OBJECT = Namespace(name='http://stix.mitre.org/extensions/TestMechanism#Snor**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_STIX_OBJECT = Namespace(name='http://stix.mitre.org/stix-1', prefix='stix', schema_locatio**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_STIXCAPEC_OBJECT = Namespace(name='http://stix.mitre.org/extensions/AP#CAPEC2.7-1',**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_STIXCIQADDRESS_OBJECT = Namespace(name='http://stix.mitre.org/extensions/Address#CI**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_STIXCVRF_OBJECT = Namespace(name='http://stix.mitre.org/extensions/Vulnerability#CVRI**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_STIXMAEC_OBJECT = Namespace(name='http://stix.mitre.org/extensions/Malware#MAEC4.1**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_STIXOPENIOC_OBJECT = Namespace(name='http://stix.mitre.org/extensions/TestMechanism**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_STIXOVAL_OBJECT = Namespace(name='http://stix.mitre.org/extensions/TestMechanism#OV**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_STIXCOMMON_OBJECT = Namespace(name='http://stix.mitre.org/common-1', prefix='stixCom**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_STIXVOCABS_OBJECT = Namespace(name='http://stix.mitre.org/default_vocabularies-1', pre**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_TA_OBJECT = Namespace(name='http://stix.mitre.org/ThreatActor-1', prefix='ta', schema_loc**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_TLPMARKING_OBJECT = Namespace(name='http://data-marking.mitre.org/extensions/Markin**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace

URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_TOUMARKING_OBJECT = Namespace(name='http://data-marking.mitre.org/extensions/Markin**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_TTP_OBJECT = Namespace(name='http://stix.mitre.org/TTP-1', prefix='ttp', schema_location=**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_XAL_OBJECT = Namespace(name='urn:oasis:names:tc:ciq:xal:3', prefix='xal', schema_locatio**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_XNL_OBJECT = Namespace(name='urn:oasis:names:tc:ciq:xnl:3', prefix='xnl', schema_locatio**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_XPIL_OBJECT = Namespace(name='urn:oasis:names:tc:ciq:xpil:3', prefix='xpil', schema_loca**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

stix.utils.nsparser.**NS_YARATM_OBJECT = Namespace(name='http://stix.mitre.org/extensions/TestMechanism#YARA**
A convenience class which represents simplified XML namespace info, consisting of exactly one namespace URI, and an optional prefix and schema location URI. This is handy for building up big tables of namespace data.

Version: 1.2.0.11

stix.utils.parser Module

Classes

class stix.utils.parser.**UnsupportedVersionError**(*message*, *expected=None*, *found=None*)
Bases: exceptions.Exception

A parsed document is a version unsupported by the parser.

class stix.utils.parser.**UnknownVersionError**
Bases: exceptions.Exception

A parsed document contains no version information.

stix.utils.parser.**UnsupportedRootElement**
alias of UnsupportedRootElementError

class stix.utils.parser.**EntityParser**
Bases: mixbox.parser.EntityParser

Version: 1.2.0.11

3.2 API Coverage

The *python-stix* APIs currently provide partial coverage of all STIX-defined constructs. Development is ongoing toward the goal of providing full STIX language support in the APIs. Until such time that full coverage is provided, an overview of which constructs are available in these APIs will be maintained below.

Note: Many STIX constructs can contain **CybOX** constructs. The **python-cybox** project provides its own APIs for interacting with the **CybOX** specification. Please see the CybOX API Documentation for information about CybOX API coverage.

3.2.1 STIX Core

STIX Construct	API Coverage	Documentation
STIX Package	Full	*stix.core.stix_package.STIXPackage*
STIX Header	Full	*stix.core.stix_header.STIXHeader*
Related Packages	Full	*stix.core.stix_package.RelatedPackages*

3.2.2 STIX Top-level Constructs

STIX Construct	API Coverage	Documentation
Campaign	Full	*stix.campaign.Campaign*
Course of Action	Full	*stix.coa.CourseOfAction*
Exploit Target	Full	*stix.exploit_target.ExploitTarget*
Incident	Partial	*stix.incident.Incident*
Indicator	Full	*stix.indicator.indicator.Indicator*
Observable	*Provided by* **CybOX**	
Threat Actor	Full	*stix.threat_actor.ThreatActor*
TTP	Partial	*stix.ttp.TTP*

3.2.3 STIX Features

STIX Construct	API Coverage	Documentation
Confidence	Partial	*stix.common.confidence.Confidence*
Handling	Full	*stix.data_marking.Marking*
Markup in Structured Text	× None	
Relationships	Full	

3.2.4 STIX Extensions

STIX Construct	API Coverage	Documentation
Address Extensions		
CIQ Address	× None	
Attack Pattern Extensions		
CAPEC 2.7	× None	
Identity Extensions		
CIQ Identity	Partial	*stix.extensions.identity.ciq_identit*
Malware Extensions		
MAEC	Full	*stix.extensions.malware.maec_4_1_mal*
Marking Extensions		
Simple Marking	Full	*stix.extensions.marking.simple_marki*
TLP	Full	*stix.extensions.marking.tlp.TLPMarki*
Terms of Use	Full	*stix.extensions.marking.terms_of_use*
Structured COA Extensions		
Generic Structured COA	Full	*stix.extensions.structured_coa.gener*
Test Mechanism Extensions		
Generic Test Mechanism	Full	*stix.extensions.test_mechanism.gener*
OVAL	× None	
OpenIOC	Full	*stix.extensions.test_mechanism.open_*
SNORT	Full	*stix.extensions.test_mechanism.snort*
YARA	Full	*stix.extensions.test_mechanism.yara_*
Vulnerability Extensions		
CVRF	× None	

3.2.5 STIX Vocabularies

STIX Construct	API Coverage	Documentation
AssetTypeVocab-1.0	Full	*stix.common.vocabs.AssetType_1_0*
AttackerInfrastructureTypeVocab-1.0	Full	*stix.common.vocabs.AttackerInfrastructureType*
AttackerToolTypeVocab-1.0	Full	*stix.common.vocabs.AttackerToolType_1_0*
AvailabilityLossTypeVocab-1.0	Full	*stix.common.vocabs.AvailabilityLossType_1_0*
AvailabilityLossTypeVocab-1.1.1	Full	*stix.common.vocabs.AvailabilityLossType_1_1_*
COAStageVocab-1.0	Full	*stix.common.vocabs.COAStage_1_0*
CampaignStatusVocab-1.0	Full	*stix.common.vocabs.CampaignStatus_1_0*
CourseOfActionTypeVocab-1.0	Full	*stix.common.vocabs.CourseOfActionType_1_0*
DiscoveryMethodVocab-1.0	Full	*stix.common.vocabs.DiscoveryMethod_1_0*
DiscoveryMethodVocab-2.0	Full	*stix.common.vocabs.DiscoveryMethod_2_0*
HighMediumLowVocab-1.0	Full	*stix.common.vocabs.HighMediumLow_1_0*
ImpactQualificationVocab-1.0	Full	*stix.common.vocabs.ImpactQualification_1_0*
ImpactRatingVocab-1.0	Full	*stix.common.vocabs.ImpactRating_1_0*
IncidentCategoryVocab-1.0	Full	*stix.common.vocabs.IncidentCategory_1_0*
IncidentEffectVocab-1.0	Full	*stix.common.vocabs.IncidentEffect_1_0*
IncidentStatusVocab-1.0	Full	*stix.common.vocabs.IncidentStatus_1_0*
IndicatorTypeVocab-1.0	Full	*stix.common.vocabs.IndicatorType_1_0*
IndicatorTypeVocab-1.1	Full	*stix.common.vocabs.IndicatorType_1_1*
InformationSourceRoleVocab-1.0	Full	*stix.common.vocabs.InformationSourceRole_1_0*
InformationTypeVocab-1.0	Full	*stix.common.vocabs.InformationType_1_0*
IntendedEffectVocab-1.0	Full	*stix.common.vocabs.IntendedEffect_1_0*
LocationClassVocab-1.0	Full	*stix.common.vocabs.LocationClass_1_0*
LossDurationVocab-1.0	Full	*stix.common.vocabs.LossDuration_1_0*
LossPropertyVocab-1.0	Full	*stix.common.vocabs.LossProperty_1_0*
MalwareTypeVocab-1.0	Full	*stix.common.vocabs.MalwareType_1_0*
ManagementClassVocab-1.0	Full	*stix.common.vocabs.ManagementClass_1_0*
MotivationVocab-1.0	Full	*stix.common.vocabs.Motivation_1_0*
MotivationVocab-1.0.1	Full	*stix.common.vocabs.Motivation_1_0_1*
MotivationVocab-1.1	Full	*stix.common.vocabs.Motivation_1_1*
OwnershipClassVocab-1.0	Full	*stix.common.vocabs.OwnershipClass_1_0*
PackageIntentVocab-1.0	Full	*stix.common.vocabs.PackageIntent_1_0*
PlanningAndOperationalSupportVocab-1.0	Full	*stix.common.vocabs.PlanningAndOperationalSupp*
PlanningAndOperationalSupportVocab-1.0.1	Full	*stix.common.vocabs.PlanningAndOperationalSupp*
SecurityCompromiseVocab-1.0	Full	*stix.common.vocabs.SecurityCompromise_1_0*
SystemTypeVocab-1.0	Full	*stix.common.vocabs.SystemType_1_0*
ThreatActorSophisticationVocab-1.0	Full	*stix.common.vocabs.ThreatActorSophistication_*
ThreatActorTypeVocab-1.0	Full	*stix.common.vocabs.ThreatActorType_1_0*

CHAPTER 4

FAQ

- **My RAM consumption rises when processing a large amount of files.** This problem is caused by a python-cybox caching mechanism that is enabled by default. To prevent this issue from happening use the `cybox.utils.caches.cache_clear()` method in your code/script to release the cached resources as appropriate. Refer to the `cybox` documentation for more details.

CHAPTER 5

Contributing

If a bug is found, a feature is missing, or something just isn't behaving the way you'd expect it to, please submit an issue to our tracker. If you'd like to contribute code to our repository, you can do so by issuing a pull request and we will work with you to try and integrate that code into our repository.

CHAPTER 6

Indices and tables

- genindex
- modindex
- search

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