# CybOX v2.1 Release Notes

This document provides a high-level summary of the changes between CybOX 2.0.1 and 2.1. For additional information about the development of CybOX v2.1, please refer to the CybOX Release Planning wiki and the CybOX v2.1 Issue Tracker.

## Core and Common Changes

- Added capability for capturing multiple observations (sightings) of a given Observable.
- Added capability to record geolocation information on given Observables, Actions, Events, and Objects.
- Added OASIS CIQ extension point for capturing rich location information.
- Added capability for specifying the case-sensitivity of CybOX patterns.
- Added capability for specifying the observed character encoding of Observable data.
- Authors can specify list delimiters of their choice when declaring multiple values for a field within a pattern.
- Added capability for specifying the precision of DateTime fields.
- Removed fixed declaration of data types for derivations of BaseObjectPropertyType.
- Expanded Controlled Vocabularies for Tool Types and Object Relationship Types.
- Moved RegionalRegistryType and RegionalRegistryEnum from WHOIS Object to Common schema.
- Added CipherType to Common to enumerate common encryption ciphers.
- Added ability to capture the commercial/non-commercial nature of a tool in ToolInformationType.
- Removed unused datatypes (ReferenceType and ReferenceListType).
- Made required attributes and fields optional where requirement introduced conflicts.
- Fixed typos in field names and annotations.

## New Objects

- Archive File Object
- ARP Cache Entry Object
- Autonomous System (AS) Object
- Domain Object
- Hostname Object
- Image Object
- SMS Object
- URL History Object
- Windows Hook Object
- Windows Filemapping Object

## Modified Objects

- Account Object - New properties
- Address Object - New properties and fixed typos
- Artifact Object - New properties
- Code Object - Restructured properties
- DNS Query Object - New properties
- DNS Record Object - New properties
- Device Object - New properties
- Email Message Object - New properties
- File Object - New and restructured properties
- HTTP Session Object - New and restructured properties
- Linux Package Object - Restructured properties
- Memory Object - New and restructured properties
- Network Connection Object - New and restructured properties
- Network Packet Object - New and restructured properties
- Network Socket Object - New and restructured properties
- Port Object - Restructured properties
- Product Object - New properties
- Socket Address Object - New and restructured properties
- System Object - Restructured properties
- Whois Object - New and restructured properties
- Windows Driver Object - Restructured properties
- Windows Executable File Object - New and restructured properties
- Windows Handle Object - New properties
- Windows Mailslot Object - Restructured properties
- Windows Process Object - New properties
- X509 Certificate Object - New and restructured properties

## Bug Fixes

- Removed the Type field from PESectionType in the Windows Executable File Object.*
- Fixed several field name typos in the Network Packet Object.*
- Updated many required fields to be optional, to fix issues that occur when writing CybOX patterns.
- Changed Accessed_Time and Modified_Time field data types to DateTimeObjectPropertyType.*
- Changed Vary field in HTTPResponseHeadFieldsType data type to StringObjectPropertyType.
- Removed X_Forwarded_Proto field from HTTPResponseHeaderFieldsType.*
- Changed DNT header data type to StringObjectPropertyType in HTTPRequestHeaderFieldsType.*
- Changed data type of Handle in WinMailslotObjectType to WindowsHandleObjectType.*
- Renamed X509CertificateType to X509CertificateContentsType.
- Fixed issues with min/max occurs in Network Packet Object.

- Fixed timestamp data type issues in Network Packet Object.[*]
- Changed data type of Trigger_Type field in Windows Task Object to TaskTriggerType.[*]
- Updated Controlled Vocabulary vocab reference fields to refer to correct CybOX version.
- Fixed spelling errors in annotations.
- Removed “nillable=True” on fields where this declaration was present.
- Changed many required fields to optional where their requirement introduced conflicts when authoring CybOX patterns.

[*] This change breaks backwards compatibility with previous versions of CybOX, but was introduced to address a critical bug, as permitted by the CybOX versioning policy.