

**(C) OXF Data Standardization Requirements
for
Interactive Tools
for
Microsoft Windows-Based Personal Computers and Servers**

Version 1.2

29 April 2013

(C) The OXF Data Standardization Requirements document applies to all new or existing interactive tools that are being upgraded. This standard will encourage consistency across the interactive tool environment and allow for predictable data output and ingestion parameters. This standard was written specifically for Microsoft Windows-based personal computer and server targets.

(U//FOUO) While this document specifically applies to interactive tools, nothing precludes the use of relevant parts of this standard with other target collections/tool development efforts including automated operations/tools.

1.0 (U) Background

(C) Data delivery to ECG data repository and analytical systems has been inconsistent in format and content across COG/NOD elements. Many data deliveries require manual parsing by officers in ECG, or other recipients, to enable successful processing by analytical systems. This manual parsing delays information delivery to targeters and analyst. Inconsistent content can mean that FI data cannot be acted upon due to incomplete information.

(C) This document will establish a standard format and content delivery of FI data collected via COG/NOD interactive tool capabilities. This includes the establishment of baseline requirements for the collection of metadata required for the ECG analytical systems. Often overlooked, it is the metadata that makes FI data collections useful to end users.

CLASSIFIED BY: 2054698
DERIVED FROM: CIA NSCG COL C-06, CIA NSCG MIS C-06
REASON 1.4(c),(g)
DECLASSIFY ON: 20630328

2.0 (U) Overview

(C) All data collected will be forwarded using the appropriate OXF data schema plus DNT payload schema. This approach is a simplification of the NSA's Common Cryptologic Data Format (CCDF). The OXF data schema was created by the IOC. Simply stated, each file collected from target will have a corresponding "meta-data" file. This file will include the meta data elements as defined in section 4.0 - Operational XML Format (OXF). The data collected should be stored in a pre-defined DNT payload schema or as a binary (copy from target).

(U//FOUO) Data pulls from a target will be collected and stored per NOD standard operating procedures. **Metadata files (OXF) must be stored in the same directory as the collected data file.**

(U) All generated output such as log or survey data, should be UTF-8 encoded. All generated XML files should adhere to XML standards and also be UTF-8 encoded.

(C) When complete, an operator (or the tool) archives the collection and forwards the archive to the appropriate upload directory on the One Way Transfer system for passing to ECG or other means necessary to deliver to mission partners (e. g. Mailorder to the NSA). Archives should be created using RAR, ZIP, or other utility that provides full UTF-8 support.

(U//FOUO) **Special Note:** This standard and associated schemas and examples are to be treated as classified – CONFIDENTIAL. Data processing for compliance with this standard must occur on system approved for the processing of information at the CONFIDENTIAL or higher level. The metadata required to be collected to meet this standard is unclassified when not directly associated with the USG. This means that non-cleared parties may be provided – as appropriate - with a list of the metadata required but only cleared resources may be used to develop back end processors that parse the data collections into the appropriate payload and metadata schemas.

3.0 (U) References

3.1 (U//FOUO) OXF Payload Schema specifications Version 1.0

3.2 (U//FOUO) OXF Example Set

4.0 (U//FOUO) Operational XML Format (OXF)

(U//FOUO) The **OXF** defines the metadata and associated output files a tool is required to record when conducting an interactive operation. The tool shall record, in the OXF standard, metadata of all downloaded files. This metadata consists of the following fields at a minimum:

Table 1 - (C) OXF Format Fields

Field	Description	If Not Available	Format	Notes
OXF Version	OXF standard version used.	Not a valid condition.	String.	This may be used by ECG's parser to determine correct parser use.
UID	Unique Identifier (UID) associated with the machine the file or data was collected from. This is a generated value.	Not a valid condition.	32 byte String. ASCII 0-9, A-F only. The specification for the generation of a UID is captured in appendices A - Microsoft Windows UID Creation Guide.	The specification for the generation of a UID is captured in appendices A - Microsoft Windows UID Creation Guide. All values used to compute this hash will also be returned.
NetBIOS Hostname	Used in the UID computation.	Leave blank	String	
MAC	Used in the UID computation.	n/a - one MAC must be available	String, colon separated. Example: 58:b6:ff:3E:77:ab	Collect all Ethernet (to include 802.11 wireless) or Token Ring MACs, order in ascending order
UID Version	UID version used.	Not a valid condition.	String.	
File Name	The name of the file (e.g. myfile.doc)	Not a valid condition.	String.	
File Path	Full path to the file as viewed from the target machine (e.g. C:\Documents and Settings\John\).	Not a valid condition.	String.	NT path format will be supported. Logical volume path is preferred. Note: this is only required for files copied from the target.
Create Date	Creation date of the file.	Not a valid condition.	YYYY-MM-DDTHH:MM:SSZ	All times recorded are in UTC (a.k.a. Zulu) of the attack platform's current date time.
Accessed Date	Last accessed date of the file	Not a valid condition for a file collected. For a derived file, leave blank.	YYYY-MM-DDTHH:MM:SSZ	All times recorded are in UTC (a.k.a. Zulu) of the attack platform's current date time.
Modified Date	Last modified date of the file	Not a valid	YYYY-MM-DDTHH:MM:SSZ	All times recorded are

Field	Description	If Not Available	Format	Notes
		condition for a file collected. For a derived file, leave blank.		in UTC (a.k.a. Zulu) of the attack platform's current date time.
Collected Date	Date/time information from the target relative to GMT	Not a valid condition.	e. g. Target Local Date/Time: YYYY-MM-DDTHH:MM:SS Target offset from GMT: +HH:MM Local (ICON) GMT Time as calculated from local Date/Time plus offset: YYYY-MM-DDTHH:MM:SSZ	This is a combination of three elements; two from target perspective and one based on client (ICON workstation) date/time information.
File Size	The size in bytes of the file.	Not a valid condition.	String. ASCII 0-9 only.	No separators
Tool ID	A unique identifier associated with the tool and version used to collect the data.	This is an optional field.	ASCII characters a-z, z-Z, 0-9 only.	This optional field is being included for strategic reasons but may be used by tools that currently generate unique IDs associated with a tool and version.
MD5 Hash	An MD5 of the file.	Not a valid condition.	32 byte String. ASCII 0-9, A-F only.	
Derived	Derived field will be "true" or "false" to indicate whether or not the file retrieved was a complete copy of a file from the target or a file generated from data derived on the target.	Not a valid condition.	"true" or "false" Strings exclusive of the quotes.	If a document is downloaded from the target's "My Documents" folder, the derived flag will be set to "false." If one executes a "pwdump" from the target machine, the derived flag will be set to "true" because the resultant file is derived data and not an actual file created by the target. The derived indicator should also be used for

Field	Description	If Not Available	Format	Notes
				"partial" files.

5.0 (U//FOUO) Collected File Naming Scheme

(U) The metadata file will be named the same as the file forwarded with the addition of .oxf.xml appended to the name. The metadata file for a named myfile.doc would be myfile.doc.oxf.xml

(U//FOUO) Files collected from target will be saved to their original name. If multiple files of the same name are collected, each will be appended with a sequential number using an underscore followed by the number. Derived files such as surveys, dirwalks, screenshots, etc.; shall be named according to existing NOD standards. The associated metadata file will carry the same name plus .oxf.xml. Example:

File	Associated Metadata File
myfile.doc	myfile.doc.oxf.xml
myfile_1.doc	myfile_1.doc.oxf.xml
myfile_2.doc	myfile_2.doc.oxf.xml
targetID_dirwalk_201205301348Z.xml	targetID_dirwalk_201205301348Z.xml.oxf.xml

(U//FOUO) Actual naming conventions used shall be as specified by NOD standards. Collected files and their associated metadata files shall be stored in the same directory.

Appendix A

(U) UID Generation for Microsoft Windows Devices

Version 1.0

Synopsis:

(C) It is important to IOC's analytical processes to uniquely identify a machine per target or operation. The desire is to compute the same UID for a device independent of which tool generates the UID. This allows IOC to tie data sets from different tools to the same (or different) devices.

(U//FOUO) This standard will be used when computing a UID for Microsoft Windows personal computers and/or servers.

Order	Field	If Not Available	Format	Notes
1	NetBIOS Hostname	Use 8 null characters		Used for computation purposes
2	MAC	n/a – one MAC must be available	Hex, example: 58b6ff3E77ab	Collect all Ethernet (to include 802.11 wireless) or Token Ring MACs. Order in ascending order. Use the first MAC only for UID computation.

(U) UID Computation for Microsoft Windows Based Personal Computers/Servers

(U) A unique identifier will be generated from the fields listed above by passing each data element into the MD5 algorithm sequentially in the order described in the table above.