Specification

Universal Proof of Preflight

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1 Description

In response to frequent requests for embedding a "preflight audit trail" this specification describes a suggested approach. A preflight audit trail is information about a preflight check that has been carried out for the PDF at hand, and contains information about the preflight profile used as well as what the outcome of the preflight check was.

For protection against tampering with both the PDF itself as well as the audit trail, a digital signature is used as defined in the PDF specification, thus avoiding proprietary techniques or algorithms. For the sake of interoperability only digital signature algorithms shall be used which are defined in the PDF 1.7 (or earlier) specification(s) and which are supported in Acrobat as of Acrobat 8. The digital signature nevertheless must comply with all requirements present in the PDF/X-1a and PDF/X-3 standards.

To make it easy and efficient to locate the digital signature the digital signature must be present in a signature annotation on the first page of the document. In addition, the Name field in the signature dictionary must contain the exact value "Preflight Ticket Signature". This value is always the same and is used to identify the signature. It has to be taken into account though, that in the case other digital signatures are present in the PDF, only the most recent digital signature will be considered valid, unless one rolls back the PDF to the previously signed version or versions.

The actual audit trail is stored as XMP inside the document's XMP metadata stream. The XMP data – using its own dedicated namespace – is embedded as a metadata stream object which is contained in the stream which is the value of the Metadata entry in the Catalog dictionary.

The information in the actual audit trail consists of the following parts:

human readable information about the preflight profile execution to be tracked

information that allows a conforming product to determine whether a profile used for preflighting is the same as some other profile

The human readable/displayable information consists of

- name of profile (for example "Magazine Ads")
- software by which the profile was created (for example "Adobe Acrobat Preflight")
- the version number of the software used for creating the profile (for example "8.0")
- the version number of the format in which the profile was stored (for example "1.1")
- result of executing the profile, with four possible values "Errors", "Warnings", "Info" or "Success" (for example "Errors")
- an optional entry with descriptive text about the errors if any (actual implementation is at the discretion of the software creating the audit trail) (for example: "Three errors and five warnings" or "Errors: More than 1 page; Font not embedded; RGB used. Warnings: Resolution of grayscale image less than 150 ppi")
- date and time when the profile was executed in XMP date format (for example "2007-08-06T12:31:35+02:00")
- information (for example, a fingerprint or checksum) that makes it possible to determine whether the profile used is the same as some other profile (example: "ff68-7293-a8ee-524c-a9df-804f-10ae-d917"):

- a fingerprint that cannot easily be forged; as different softwares have different ways of storing profiles (for example, Preflight stores internal profiles in a different way than exported profiles) it is up to the respective software to create a fingerprint; in order to make it possible to validate the fingerprint for a profile created by a software that a user does not own (but where the user can get hold of the fingerprint of such profile from a trustworthy source) any software following the concept of this paper must have a means to display a fingerprint - in ASCII-ized/hexadecimal/ASCII85 form to make copy and paste easy - such that the user can retrieve it and share it with other users independent of the software and of the profile itself.

2 Syntactical specification

2.1 Digital signature dictionary entries for a Preflight Ticket signature

The following entries are used in a way specific to a "Preflight Ticket" signature:

- Name
- type: text string
- required: yes
- value: must be "Preflight Ticket Signature"

Note: It is important to make sure that the Preflight Ticket XMP metadata is inserted first and the digital signature applied thereafter..

2.2 XMP metadata for Preflight Ticket

The namespace used for the audit trail according to "Preflight Ticket" is

http://www.gwg.org/ns/gwg_preflight_v1/

The prefix used for this namespace must be "gwg_preflight".

The "Preflight Ticket" XMP metadata is required and must be stored inside the XMP metadata stream that is the value of the Metadata key in document's Catalog dictionary.

Note: Due to the syntactical provisions in this specification, only one Preflight Ticket – both in terms of the specific digital signature as well as with regard to the associated XMP metadata – can be present at any time in a PDF. If Preflight Ticket information from an earlier preflight check is already present, it must be overwritten by the new Preflight Ticket.

The entries for the XMP metadata for the Preflight Ticket are:

- profile_name
  - type: Text
  - required: yes
  - description: name of the preflight profile used
  - example: "MagazineAds_1v3

- profile_creator
  - type: Text
  - required: yes

- description: software by which the profile was created
- example: “Adobe Acrobat Preflight”

- profile_creator_version
  - type: Text
  - required: yes
  - description: the version number of the software used for creating the profile
  - example: “8.0”

- profile_format_version
  - type: Text
  - required: yes
  - description: the version number of the format in which the profile was stored
  - example: “1.1”

- preflight_results
  - type: closed Choice
  - required: yes
  - description: result of executing the profile, with four possible values “Errors”, “Warnings”,
  - “Info” or “Success” (severity in decreasing order; highest severity found in the
  - preflight check must be reported here)
  - example: “Errors

- preflight_results_description
  - type: Text
  - required: no
  - description: an optional entry with descriptive text about the errors if any (actual implementation is at the discretion of the software creating the audit trail)
  - example: “Three errors and five warnings” or “Errors: More than 1 page; Font not embedded; RGB used”

- preflight_executed_date
  - type: Date
  - required: yes
  - description: date and time when the profile was executed
  - example: “2007-08-06T12:31:35+02:00”

- profile_fingerprint
  - type: Text
  - required: yes
  - description: a fingerprint for the profile that was used to carry out the preflight check
  - example “ff68-7293-a8ee-524c-a9df-804f-10ae-d917”

2.3 Algorithm for profile fingerprint

The algorithm for creating the profile fingerprint is at the discretion of the preflighting software. It is suggested that the fingerprint is created in such a way that it is very difficult to forge it – the algorithm used should not be trivial, and it should be created from all data in the profile.

Note: A possible approach – but not required to be implemented in this way by this specification – is to store the actual fingerprint in the profile_fingerprint entry in the XMP metadata in hex format. For easier interactive inspection by a human user, it might be grouped into segments of four lower case hex characters, separated by hyphens.

2.4 Requirements for the Preflight Ticket Signature annotation

In order to make it easier to comply with various requirements from PDF based standards (like PDF/X) the Preflight Ticket signature must honor the following provisions:

- appearance stream:
  - must be present
  - may be empty but may as well have contents; if it is not empty:
  - must use color spaces that do not violate applicable PDF based standards (for example: in a PDF/X-1a file only DeviceGray and DeviceCMYK - or spot colors with an alternate space of DeviceGray or DeviceCMYK - are recommended; for a PDF/X-3, PDF/X-4 or PDF/X-5 file color spaces - as well as alternate spaces - must either be device independent or must be consistent with the destination color space in the OutputIntent)
  - if font-based text is used, font(s) must be embedded
  - bounding box of signature must be outside ArtBox, TrimBox and BleedBox