

Digitally Signing Acrobat PDF Files

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1. Introduction

This note describes how to apply digital signatures to Acrobat PDF files. Digital signatures, compared to scanned signature pages, add significant value and require less time and effort.

Digital signatures, as described here, provide the following capabilities:

- (a) documents can be signed from the keyboard
- (b) scanning is not required, except during initial set-up to digitise a single copy of a handwritten signature
- (c) the signature appears on the document like a handwritten signature
- (d) the entire document is signed, not just the front page
- (e) if the document is subsequently altered this fact is apparent
- (f) signatures can be validated, both the signature itself and the signatory's credentials
- (g) signatures can be appended by several people
- (h) if changes are made between signatures, the document can be rolled back to that version

The procedures described here assume a Windows PC. Although Acrobat is available on Unix, the Unix versions lag significantly the Windows and Mac versions and indeed it is not clear whether the full Acrobat Version 4 or later will ever be released on Unix.

More detailed information is available as listed in Section 9. Ideas on how we should use digital signatures are evolving - comments are welcome.

2. Acronyms

PAB Personal Address Book
PDF Portable Document Format
PGP Pretty Good Privacy

3. Prerequisites

Adobe Acrobat 4 (the full product, not the Reader) or later is required to apply signatures.

For initial set-up, the handwritten signature needs to be available in a PDF file (see 4).

Signatures can be viewed and printed from Acrobat Reader, but it may not be possible to validate them.

4. Initial Set Up

4.1 Scan Handwritten Signature

A scanned handwritten signature is not necessary, but including one in a digital signature makes the document look like a hand-signed paper document and adds a comfort factor. The signature needs to be made available in a PDF. There are several ways to do this, e.g.

- scan a signature into a tiff, gif, jpg file etc.
- insert the signature graphic into a blank Word document
- use Word's "Create PDF" command (in the File pull down list) to create a one page PDF.

4.2 Create Digital Signature

Using Adobe Acrobat:

- Tools / Self-Sign Signatures / Log In / New Profile
- Specify name, country etc. and a password

Acrobat Self-Sign Signatures - Create New User

User Attributes

Name (e.g. John Smith): Malcolm Stewart

Organization name: UK ATC (optional)

Organization unit: (optional)

Country: UK - United Kingdom (optional)

Profile File

User password: [masked]

Confirm password: [masked]

Creates a 1024-bit RSA private signing key and X.509 public key certificate, and stores these in a password-protected profile file.

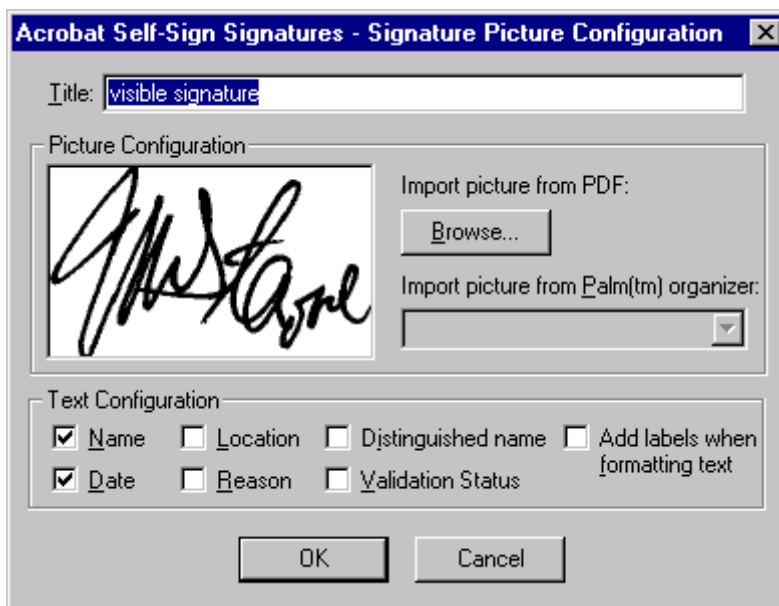
OK Cancel

- OK
- Save in a convenient user directory

4.3 Configure Signature

Using Adobe Acrobat:

- Tools / Self-Sign Signatures / User Settings
- Configure Picture / New
- Browse to find the PDF file with your signature
- Specify "visible signature" or somesuch for Title
- Specify name and date for text configuration, or whatever information you want to appear - none is OK



- OK

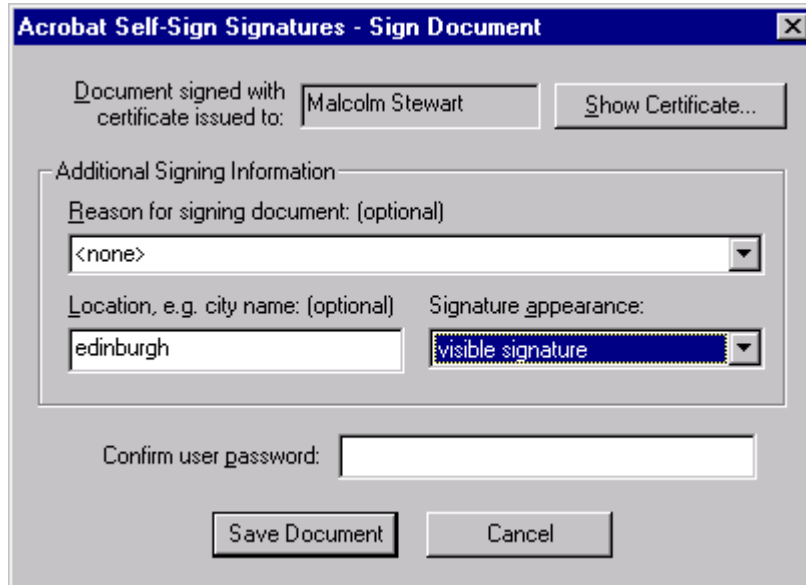
5. Digitally Signing a PDF

Using Acrobat:

- Open your PDF file - the document you want to sign
- Tools/ Self-Sign Signatures / Log In
- Click the Digital Signature Tool (left hand side next to bottom - a hand holding a pen)
- Drag a rectangle into which the signature will be inserted



- OK



- select "visible signature" for signature appearance (or whatever you called it during set up)
- enter your password and click Save Document
- specify a new filename for the signed PDF

Note that a new file is created when the first digital signature is applied. One can overwrite the original file but it's best not to in case the signature doesn't look quite right. If several people are adding signatures, new files are not created.

6. Validating a Digital Signature

When one views a signed PDF the signatures by default are not verified. To view the status of signatures click the yellow key on the bottom bar. To verify a signature one can right click over it and select "Verify". the symbol and the properties indicate whether the signature is valid and whether the signatory's credentials are valid.

In order to validate a signatory's credentials one must tell the system that you trust a particular signature. This information is then subsequently used to validate signatures on other documents. This is achieved through public keys and digital certificates.

The easiest way to tell the system you trust a particular signature is to import a signature's certificate into your personal address book (PAB):

- Right click the signature,
- Import into PAB
- Check the displayed validation string, e.g. by phoning the signatory (overkill for typical requirements, so just ignore it)
- Close

For typical use within ROE, validating signatures is more of a curiosity feature, but does illustrate the rigour that digital signatures can provide compared to handwritten ones.

7. Digitally Signing Files other than PDF

The techniques described above apply only to PDF files. PGP provides a means of signing and/or encrypting any file (as well as providing many other features). Unfortunately it does not seem to be possible currently to use a PGP digital signature within Acrobat.

8. Related Features

- (a) Other digital signatures handlers can be used other than the Adobe default.
- (b) Documents can be encrypted.
- (c) Printing a document can be disabled.
- (d) Passwords can be specified to prevent/allow the document to be read, printed etc.
- (e) If a document has been changed since it was signed, it can be rolled back to the unaltered state.
- (f)

9. Further Reading

- [1] Acrobat Help
- [2] *Digitally sign PDF documents*, 2001, Adobe Inc.,
<http://www.adobe.com/epaper/tips/acr5digsig/main.html>
- [3] *Adobe Acrobat master class*, Feb. 2002, PC Pro Issue 88, P205-213.
- [4] *PGP Freeware User's Guide*, 2001, Version 7.0, Network Associates.
- [5] *An Introduction to Cryptography*, 2000, Network Associates.

10. Change Record

Date	Version	By whom	Changes
20 Dec. 2001	1	J M Stewart	Original