



Frequently Asked Questions

(click anywhere to continue)

Table of Contents

What is a digital signature?	3
Can digital signatures appear on their corresponding documents?	4
Can a digital signature be used to detect alterations made to a document?	5
How big is the hash code and how big is the digital signature?	6
What are the advantages of digital signature technology?	7
What are the problems of using digital signature?	8
What is the most important void in the Digital Signature Standards?	9
What is Digital Stamping Technology™?	10
What is a digital stamp?	11
What does a digital stamp consist of?	12
What is the physical size of a digital stamp?	13
What kind of data can be packed into the digital stamp?	14
Does the stamping system compress data?	15
Does the stamping system encrypt the data?	16
Does the system automatically check the integrity of the stamp?	17
What about time-stamping the document?	18
What is the value of a digitally stamped document?	19
What is the speed of the stamping system?	20
What is the OnLine Stamping System™?	21
What is the OnSite Stamping System™?	22
What is the acceptable input and output file formats for digitally stamped documents?	23
What are the advantages of the Digital Stamping Technology™?	24
What are the competing technologies to Digital Stamping Technology™?	25
Why do I have to stamp my documents?	26
Does your stamping system run on the iPad?	27
Why is your focus on electronic records?	28
Can you give practical examples of documents evolving to be considered records?	29
How can I add my annotations/alterations to a stamped file?	30
Adobe Reader has a “Save” function - what happens if I use it after reading a stamped file?	31
What is the value of stamped documents in resolving disputes of intellectual properties?	32



Q

What is a digital signature?

A

A digital signature is a kind of an electronic form of data encrypted with one key -- called the Private Key -- that can only be decrypted with another key, called the Public Key.

Both keys are related to each other through a very complex relationship, which is extremely difficult to break.

The data which is the subject of encryption is called the hash code of the document.

Q

Can digital signatures appear on their corresponding documents?

A

The answer is “No”, because this action would immediately alter the document; consequently, the hash code would no longer be the same and thus the digital signature would not be valid.

As such, the digital signature of a document must be kept separate from the document itself.

Q

Can a digital signature be used to detect alterations made to a document?

A

Yes.

However, a digital signature cannot distinguish how many alterations were made to a document.

In addition, if a document is altered, the digital signature cannot indicate the location(s) of the alteration(s).

As such, it cannot be used for detailed forensic evidences in criminal cases.

Q

How big is the hash code and how big is the digital signature?

A

The size of the hash code depends on the algorithm used to generate it.

It can be as small as 20 bytes and the digital signature can be as small as less than 1 Kbyte of data.

Q

What are the advantages of digital signature technology?

A

Government legislation is available to support using digital signature technology as an alternative to human signatures.

In addition, an infrastructure supporting digital signature technology -- called PKI or Public Key Infrastructure -- is available to and accessible by hardware and software vendors.

Q

What are the problems of using digital signature?

A

- Documents and their digital signatures are separate from each other
- Upon verification, a digital signature gives a qualifying statement about a document being altered or not - it cannot locate, isolate and display any alterations
- There is always a need to bring the original document for comparisons if the signed document is found to have been altered
- As such, digitally signed documents are not self-authenticated and forensic evidences cannot be established with such documents

Q

What is the most important void in the Digital Signature Standards?

A

When a document is found to have been altered, the burden of proof is left as an unanswered topic within the Digital Signature Standards.

It is expected that once a document is judged to have been altered, the burden of proof is on the digital signature technology to display the whereabouts of these alterations.

Unfortunately, this is left as an unanswered open question in the Digital Signature Standards.

Q

What is Digital Stamping Technology™?

A

Digital Stamping Technology™ or DST is an original technology developed by NexStamp (formerly Altavion) which embeds certified verifiable proofs of the integrity of a document.

In other words, NexStamp's Digital Stamping Technology™ imbues trust into documents.

Q

What is a digital stamp?

A

A digital stamp is a 2D barcode in its physical form.

A digital stamp uses 8 distinctive levels on the gray scale colors; thus a 3rd dimension is added to the physical shape of the barcode.

This added dimension makes the same physical shape of the barcode capable of representing more data than the standard black and white barcode.

Q

What does a digital stamp consist of?

A

A digital stamp is formed for each page of a document.

It is made of all the data found on the corresponding page on which it is targeted to reside.

The data on this page is analyzed at the pixelated level.

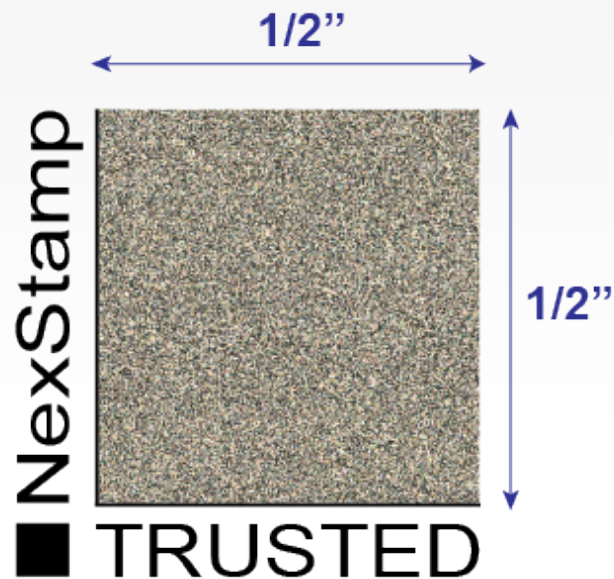
A preparatory digital image analysis algorithm is at the heart of creating the data which forms the basis of the information of the digital stamp.

Q

What is the physical size of a digital stamp?

A

The stamp is $\frac{1}{2}$ " x $\frac{1}{2}$ " and is located near the left bottom corner of the page it resides upon.



Q

What kind of data can be packed into the digital stamp?

A

Data of various types can be packed into the 2D barcode.

This includes image data and textual data in all forms of data representation.

Using multiple levels of gray scale in constructing the barcode allows for more efficient packing of data.

Q

Does the stamping system compress data?

A

Yes, the stamping system compresses data for better utilization of space.

The data stream is compressed in a lossless compression style.

This greatly reduces the length of the bit-stream to be encoded; there are a good number of data compression algorithms available for use.

The efficiency will differ from one algorithm to another; however, data compression depends on the data itself.

Q

Does the stamping system encrypt the data?

A

Before encoding, there may be a need to encrypt the compressed data to make it even more difficult for anyone trying to tamper with the data contents of the barcode.

Q

Does the system automatically check the integrity of the stamp?

A

Before checking the document's contents, the AltaStampReader™ checks the integrity of the stamp data itself.

This is a necessary step to make sure that the stamp itself -- which is used as the reference material for the document's contents on the associated page -- is healthy and has not been tampered with.

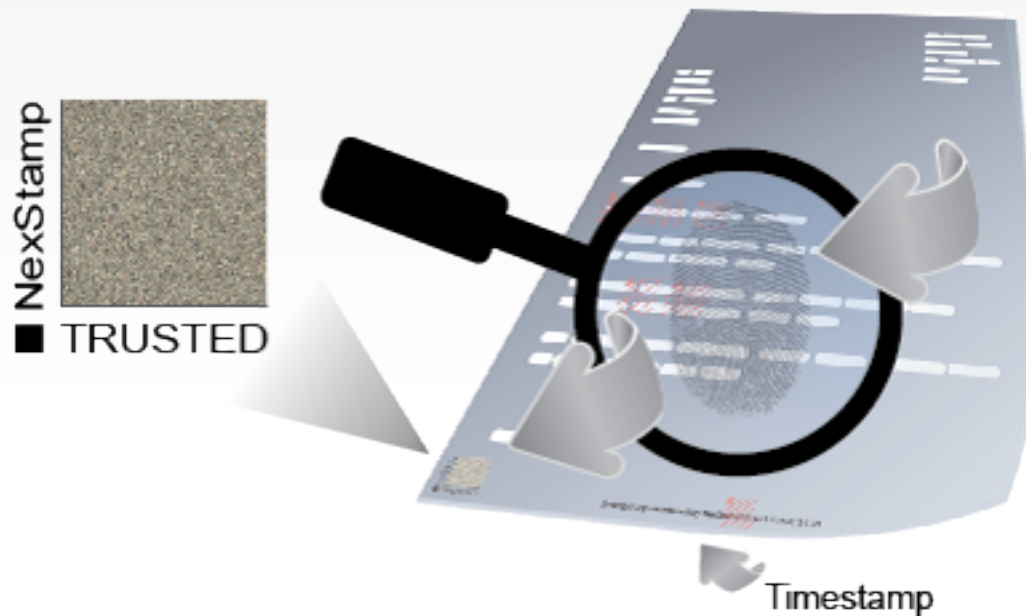
The mechanism used for checking the integrity of the stamp is twofold; the first one is to check the Cyclic Reduction Code.

Q

What about time-stamping the document?

A

A timestamp is applied to each page of the document at the time it is about to be digitally stamped. The timestamp becomes a part of the document itself.



Q

What is the value of a digitally stamped document?

A

- A digitally stamped document carries its own reference data for verification; as such, it is rightfully called a self-authenticated document
- Since digitally stamped documents are self-authenticated, such documents can be conveyed to any location (other than the original location where they were created) without the need for any other assets to support them - this simplifies information transfer

Q

What is the speed of the stamping system?

A

The speed of the stamping software is under 1 second per page on a laptop computer with dual CPU's of 2GHZ speed and 4 GB of RAM. This includes the following steps:

- Reading the document from the hard disk
- Converting the document for internal format suitable for the stamping software
- Creating the stamp and adding it to the document
- Converting the document into multi-sheet PDF
- Writing the document to the hard drive

Multiple CPU's with proper threading technique can offer better computational bandwidth.

As such, more documents can be stamped in parallel fashion.

Q

What is the OnLine Stamping System™?

A

OnLine Stamping System™ is a web service offered through NexStampUK at the following url: www.nexstampuk.com.

The advantage of this system is that it utilizes a simple process for stamping documents up to 100 pages in length.

OnLine Stamping System™ requires the normal upload and downloading functions of the files to be stamped.

The speed is limited by the speed of the communication network.

Q

What is the OnSite Stamping System™?

A

The OnSite Stamping System™ from NexStamp can be downloaded under agreements with authorized Partners of NexStamp.

Usually this is suitable for clients having to stamp large number of documents per year such as banks, government agencies, educational institutions, medical facilities, courts, etc.



Q

What is the acceptable input and output file formats for digitally stamped documents?

A

Files with extensions such: BMP, PDF, TIF, TIFF, JPEG and JPG are acceptable inputs for stamping.

Currently the stamping software can save stamped documents in PDF/A (output) format.

It is worth noting that the PDF output is in a raster scan image file with a minimum storage size, as compared with other PDF output resulting from scanners.



Q

What are the advantages of the Digital Stamping Technology™?

A

Digital Stamping Technology™ from NexStamp solves the four problems associated with digital signature technology. As such, it goes far beyond the Digital Signature Standards.

- Documents and their digital stamps are not separate from each other
- Upon verification, a digital stamp gives detailed information about a document being altered or not; as well, it displays all the locations of such alterations, if any
- There is never a need to bring the original document for comparisons if the stamped document is found to have been altered
- As such, digitally stamped documents are self-authenticated and forensic evidences can be established with such documents
- Digitally stamped documents can be transferred without any need for any further assets to support them

Q

What are the competing technologies to Digital Stamping Technology™?

A

There is no visible competing technology to the NexStamp Digital Stamping Technology in addressing all pixels on the same page, regardless of the contents.

Digital watermarking solutions offered by other companies lack many aspects of the solution offered by NexStamp's DST. For example, this technology does not link the watermark to the data.

Whence, it checks the integrity of the watermark, not the data of the document.

It is only applicable to documents at the time they are printed.

Q

Why do I have to stamp my documents?

A

When documents reach the point where they must be archived and retained for a long time, then they are called records. Records are very important items and assets for the organization which owns them. Examples of records can be found in every corner of government and business alike.

Birth certificates, passport applications, visa applications, educational diplomas, transcripts, medical records, R&D data to protect intellectual properties developed, stock market deals, import & export papers, corporate meeting notes, etc. are all examples of records which need to be retained unaltered for many years. The Digital Stamping Technology™ from NexStamp is the right candidate for offering the assurance that these documents cannot be forged or altered without being caught at any time during their retention periods.

Q

Does your stamping system run on the iPad?

A

Currently, the stamping system does not support the iPad.

However, an iPad can direct a document to the server to get the document to be stamped.

The reader/verifier will be made available on the iPad in the first quarter of 2015.

Q

Why is your focus on electronic records?

A

Documents, which are in a workflow, can change by valid alterations.

As such, when they reach maturity at the end of the flow, then they can be considered as records which must be archived and retained according to the policies defining the retention period.

When a document becomes a record the best procedure it is to ensure that it cannot be changed without detecting such changes.

At this point NexStamp DST acts as the guardian against any possible changes.

Q

Can you give practical examples of documents evolving to be considered records?

A

The processes involved in the creation of any product up to the point of moving it to production lines are steps which need to be included in the product binder for reference on how the product was arrived at.

The product design binder of an integrated circuit for example contains volumes of data and documents which need to be frozen when the product is moved to production.

As such, all the documents in such binders are considered valuable records which need to be stamped to prevent any changes in them. The same applies to pharmaceutical companies for the creation of new drugs. It applies to car making industry, construction industry, banking and insurance industries, and many more examples can be found in other industries, court cases, documenting the discussions in the Houses of Representatives and all aspects of our life.

Q

How can I add my annotations/alterations to a stamped file?

A

Annotation software does not merge the annotation notes into the subject original PDF file.

Instead all annotations are created in an overlay layer which appears as part of the original PDF at display time.

You can do this simply with Adobe Acrobat Professional (such as version 8.3.1 or later versions) and importing what you created as annotations in a PDF file format.

Q

Adobe Reader has a “Save” function - what happens if I use it after reading a stamped file?

A

You can save a file you read with Adobe reader including the stamped file.

However, the file will be altered in this process since Adobe reader adds approximately 4,800 extra bytes into the header of the file you saved.

So if the document was stamped before, it will be invalid when trying to verify it.

Actually, you do not need to save a file if you were opening just to read it.

Q


What is the value of stamped documents in resolving disputes of intellectual properties?

A

The irrefutable time stamp on a stamped document proves without doubts the existence of the document, up to the time of stamping it.

Furthermore, the content of the digital stamp on the document which is digitally signed by an impartial entity (Trust House) proves without doubts the integrity of the contents of the document on each separate page.

In addition, the power of the digital stamp of detecting, isolating and displaying alterations, even if they were as small as single pixel, makes the point clear in any dispute concerning the claims of ownership of document contents and the integrity of such documents.



As businesses and government entities around the world become more deeply dependent upon documents in digital form, a new era of Self-Authenticated Digital Documents provides a 21st Century solution to the issue of trust and attestation

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