

NAME

ksitool - Guardtime command-line tool to access KSI service.

SYNOPSIS

Sign data file or hash:

ksitool -s -f file | -F hash -o out.ksig [*more options*]

Extend signature:

ksitool -x -i sig.ksig -o ext.ksig [**-T**] [*more options*]

Download publication file:

ksitool -p -o pubfile [*more options*]

Create publication string:

ksitool -p -T [*more options*]

Verify signature:

ksitool -v -i sig.ksig -f file | -F hash [**-x** | **-b pubfile**] [*more options*]

Verify publication file:

ksitool -v -b pubfile [*more options*]

DESCRIPTION

This is a general signing and signature verification tool for Guardtime Keyless Signature services.

OPTIONS

Tasks:

-p Use for downloading publication file and creating publication string.

-s, --sign
Use for signing document or hash.

-v, --verify
Use for signature and publication file verification.

-x, --extend
Use for online verification or signature extending.

Input/output:

-b file Use specified publication file.

-f file File to be signed / verified.

-F hash
Data hash to be signed / verified. Hash format: <alg>:<hash in hex>.

-H alg Hash algorithm used to hash the file to be signed. Use when signing file (**-s -f**).

-i file Input signature token file to be extended / verified.

-o file Output file name to store signature token or publication file.

--ref *str*

Publication string as base 32 encoded string. Use with **-v**.

-T *int*

Specify a publication time to extend to (use with **-x**) or a time to create a new publication code for (use with **-p**) as the number of seconds since 1970-01-01 00:00:00 UTC.

Details:

-d Dump detailed information.

--log *file*

Dump KSI log into file.

-n Print signer Name (identity).

--nowarn

Silence warning messages.

-r Print publication References (use with **-vx**).

--silent Silence info and warning messages.

-t Print service Timing in ms.

--tlv Print signature's TLV structure.

Configuration:

-c *int* Network transfer timeout, after successful Connect.

-C *int* Network Connect timeout (is not supported with tcp client).

-E *email*

Use specified publication certificate email.

--cnstr *oid=value*

Use OID and its expected value to verify publications file PKI signature. If value part contains spaces use " " to wrap its contents. cnstr is allowed to have multiple values (**--cnstr 1.2=test --cnstr 1.3="test test"**).

--inc *file*

Use configuration file containing command-line parameters. Parameter must be written line by line.

--pass *str*

Password for authentication.

-P *url* Specify publication file URL.

-S *url* Specify Signing service URL.

--user *str*

User name for authentication.

-V *file* Use specified OpenSSL-style trust store file for publication file verification. Can have multiple values (**-V <file 1> -V <file 2>**).

-W *dir* Use specified OpenSSL-style trust store directory for publication file verification.

-X *url* Specify verification (eXtending) service URL.

Help:

-h, --help

print ksitool help.

EXIT STATUS

- 0** Exit success. Returned if everything is OK.
- 1** Exit failure. A general failure occurred.
- 3** Invalid command-line parameter. The content or format of command-line parameter is invalid. Also a parameter may be missing.
- 4** Invalid format. Input data to KSI library is invalid, for example signature or publication file format is invalid.
- 5** Network error. Ksitool is unable to connect to the service, connection is timed out or HTTP error is returned.
- 6** Verification error. Unable to verify signature or document / hash.
- 7** Extending error. Error in extending a signature or error returned by extender.
- 8** Aggregation error. Error returned by aggregator.
- 9** Input / output error. Unable to write or read file.
- 10** Cryptographic error. Error may be generated due to untrusted or unavailable hash algorithm and invalid PKI signature or untrusted certificate.
- 11** HMAC error. HMAC of aggregation or extend response is not matching.
- 12** No privileges. Operating system is not giving privileges to perform an operation.
- 13** System out of memory.
- 14** Authentication error. Aggregation or extending service is not accepting user identification parameters.

EXAMPLES

During following examples it is assumed that default service urls are defined as environment variables. Read example 1 to learn how to define service urls.

1 To use ksitool, service urls must be specified. It can be done via system variables, command-line parameters or configuration file.

1.1 To define default urls system variables KSI_AGGREGATOR and KSI_EXTENDER must be described as shown below:

```
KSI_AGGREGATOR=      url=http://test.com:3333/gt-signingservice      pass=test_pass
                        user=test_user
KSI_EXTENDER= url=http://test.com:8010/gt-extending-service pass=test_pass user=test_user
```

1.2 To define service urls on command-line or via configuration file, following parameters must be defined:

```
-X http://test.com:8010/gt-extending-service
-S http://test.com:3333/gt-signingservice
--user test_user
--pass test_pass
```

1.3 Using configuration file parameters must be written line by line (like example above) into file *conf* and

that must be included using option:

--inc *conf*

2 To sign a file *file* and save signature to *sig.ksig* call:

ksitool -s -f *file* **-o** *sig.ksig*

3 To sign a data hash (hashed with SHA256) and save signature to file *sig.ksig* call:

ksitool **-s** **-o** *sig.ksig* **-F**
SHA-256:c8ef6d57ac28d1b4e95a513959f5fcdd0688380a43d601a5ace1d2e96884690a

4 To sign a data file *file* with non-default algorithm *SHA1* call:

ksitool -s -f *file* **-H** *SHA1* **-o** *sig.ksig*

5 To verify a signature *sig.ksig* and file *file* it belongs to call:

ksitool -v -i *sig.ksig* **-f** *file*

6 To verify a signature *sig.ksig* and hash it belongs to call:

ksitool **-v** **-i** *sig.ksig* **-F**
SHA-256:c8ef6d57ac28d1b4e95a513959f5fcdd0688380a43d601a5ace1d2e96884690a

7 To verify a signature *sig.ksig* using online verification service call:

ksitool -vx -i *sig.ksig*

8 To extend a signature *sig.ksig* and save it as *ext.ksig* call:

ksitool -x -i *sig.ksig* **-o** *ext.ksig*

9 To verify an extended signature *ext.ksig* against publication from printed media call:

ksitool -v -i *ext.ksig* **--ref** AAAAAA-CT5VGY-AAPUCF-L3EKCC-NRSX56-AXIDFL-VZJQK4-WDCPOE-3KIWGB-XGPPM3-O5BIMW-REOVR4

10 To download a publication file *pubfile* call:

ksitool -p -o *pubfile*

11 To verify publication file *pubfile* call:

ksitool -v -b *pubfile*

ENVIRONMENT

Default service access URL-s:

To define default URLs system variables must be defined. For aggregator and extender, define system

variables **KSI_AGGREGATOR** and **KSI_EXTENDER** with content `'url=<url> pass=<pass> user=<user>'`. Only url part is mandatory thus user and pass can be left undefined. Default `<pass>` and `<user>` is `'anon'` and can be used if such user is available.

For publications file, define **KSI_PUBFILE** with content `'url=<url> <constraint> <constraint> ...'`. Constraint is formatted as `<OID>="<value>"` where `""` can be omitted if 'value' does not contain any white-space characters. Publications file url is mandatory but constraints are not.

Using includes (**--inc**) or defining urls on command-line will override defaults.

AUTHOR

Guardtime AS, <http://www.guardtime.com/>