Rocky Enterprise Linux 9.2 Manual Pages on command 'tpm2_quote.1'

$ man tpm2_quote.1

tpm2_quote(1) General Commands Manual tpm2_quote(1)

NAME

tpm2_quote(1) - Provide a quote and signature from the TPM.

SYNOPSIS

tpm2_quote [OPTIONS]

DESCRIPTION

tpm2_quote(1) - Provide quote and signature for given list of PCRs in given algorithm/banks.

OPTIONS

? -c, --key-context=OBJECT:

Context object for the quote signing key.

? -p, --auth=AUTH:

Specifies the authorization value for AK specified by option -C.

? -l, --pcr-list=PCR:

The list of PCR banks and selected PCRs? ids for each bank. Also see NOTES section below.

? -m, --message=FILE:

Message output file, records the quote message that makes up the data

that is signed by the TPM.

? -s, --signature=FILE:

Signature output file, records the signature in the format specified via the -f option.

? -f, --format=FORMAT:

Format selection for the signature output file.

? -o, --pcr=FILE.

PCR output file, optional, records the list of PCR values as defined by -l.

? -F, --pcrs_format=FORMAT:

Format selection for the binary blob in the PCR output file. `values' will output a binary blob of the PCR values. `serialized' will output a binary blob of the PCR values in the form of serialized data structure in little endian format. Optional. Default is `serialized'.

? -q, --qualification=HEX_STRING_OR_PATH:

Data given as a Hex string or binary file to qualify the quote, optional. This is typically used to add a nonce against replay attacks.

? -g, --hash-algorithm:

Hash algorithm for signature. Defaults to sha256.

? --cphash=FILE

File path to record the hash of the command parameters. This is commonly termed as cpHash. NOTE: When this option is selected, The tool will not actually execute the command, it simply returns a cpHash.

References

Context Object Format

The type of a context object, whether it is a handle or file name, is determined according to the following logic in-order:

? If the argument is a file path, then the file is loaded as a restored TPM transient object.

? If the argument is a prefix match on one of:

? owner: the owner hierarchy

? platform: the platform hierarchy

? endorsement: the endorsement hierarchy

? lockout: the lockout control persistent object

? If the argument argument can be loaded as a number it will be treat as a handle, e.g. 0x81010013 and used directly._OBJECT_.

Authorization Formatting

Authorization for use of an object in TPM2.0 can come in 3 different forms: 1. Password 2. HMAC 3. Sessions

NOTE: ?Authorizations default to the EMPTY PASSWORD when not speci? fied?.

Passwords

Passwords are interpreted in the following forms below using prefix identifiers.

Note: By default passwords are assumed to be in the string form when they do not have a prefix.

String

A string password, specified by prefix ?str:? or it?s absence (raw string without prefix) is not interpreted, and is directly used for au? thorization.

Examples

foobar

str:foobar

Hex-string

A hex-string password, specified by prefix ?hex:? is converted from a hexidecimal form into a byte array form, thus allowing passwords with non-printable and/or terminal un-friendly characters.

Example

hex:0x1122334455667788

File

A file based password, specified be prefix ?file:? should be the path of a file containing the password to be read by the tool or a ?-? to use stdin. Storing passwords in files prevents information leakage, passwords passed as options can be read from the process list or common

shell history features.

Examples

```
# to use stdin and be prompted
file:-
# to use a file from a path
file:path/to/password/file
# to echo a password via stdin:
echo foobar | tpm2_tool -p file:-
# to use a bash here-string via stdin:
tpm2_tool -p file:- <<< foobar
```

Sessions

When using a policy session to authorize the use of an object, prefix the option argument with the session keyword. Then indicate a path to a session file that was created with tpm2_startauthsession(1). Option? ally, if the session requires an auth value to be sent with the session handle (eg policy password), then append a + and a string as described in the Passwords section.

Examples

To use a session context file called session.ctx.

```
session:session.ctx
```

To use a session context file called session.ctx AND send the authvalue mypassword.

```
session:session.ctx+mypassword
```

To use a session context file called session.ctx AND send the HEX auth? value 0x11223344.

```
session:session.ctx+hex:11223344
```

PCR Authorizations

You can satisfy a PCR policy using the ?pcr:? prefix and the PCR mini? language. The PCR minilanguage is as follows: <pcr-spec>=<raw-pcr-file>

The PCR spec is documented in in the section ?PCR bank specifiers?.

The raw-pcr-file is an optional argument that contains the output of the raw PCR contents as returned by tpm2_pcrread(1).

PCR bank specifiers (pcr.md)

Examples

To satisfy a PCR policy of sha256 on banks 0, 1, 2 and 3 use a specifi?

er of:

pcr:sha256:0,1,2,3

specifying AUTH.

Signature Format Specifiers

Format selection for the signature output file. tss (the default) will

output a binary blob according to the TPM 2.0 specification and any po?

tential compiler padding. The option plain will output the plain sig?

nature data as defined by the used cryptographic algorithm. signature

FORMAT.

PCR Bank Specifiers

PCR Bank Selection lists follow the below specification:

<BANK>:<PCR>[,<PCR>] or <BANK>:all

multiple banks may be separated by `+'.

For example:

sha1:3,4+sha256:all

will select PCRs 3 and 4 from the SHA1 bank and PCRs 0 to 23 from the

SHA256 bank.

Note

PCR Selections allow for up to 5 hash to pcr selection mappings. This

is a limitation in design in the single call to the tpm to get the pcr

values.

COMMON OPTIONS

This collection of options are common to many programs and provide in?

formation that many users may expect.

? -h, --help=[man|no-man]: Display the tools manpage. By default, it

attempts to invoke the manpager for the tool, however, on failure

will output a short tool summary. This is the same behavior if the

?man? option argument is specified, however if explicit ?man? is re?

quested, the tool will provide errors from man on stderr. If the

?no-man? option if specified, or the manpager fails, the short op?

tions will be output to stdout.

To successfully use the manpages feature requires the manpages to be installed or on MANPATH, See man(1) for more details.

? -v, --version: Display version information for this tool, supported tctis and exit.

? -V, --verbose: Increase the information that the tool prints to the console during its execution. When using this option the file and line number are printed.

? -Q, --quiet: Silence normal tool output to stdout.

? -Z, --enable-errata: Enable the application of errata fixups. Useful if an errata fixup needs to be applied to commands sent to the TPM. Defining the environment TPM2TOOLS_ENABLE_ERRATA is equivalent. in? formation many users may expect.

TCTI Configuration

The TCTI or ?Transmission Interface? is the communication mechanism with the TPM. TCTIs can be changed for communication with TPMs across different mediums.

To control the TCTI, the tools respect:

1. The command line option -T or --tcti

2. The environment variable: TPM2TOOLS_TCTI.

Note: The command line option always overrides the environment vari? able.

The current known TCTIs are:

? tabrmd - The resource manager, called tabrmd (https://github.com/tpm2-software/tpm2-abrmd). Note that tabrmd and abrmd as a tcti name are synonymous.

? mssim - Typically used for communicating to the TPM software simula? tor.

? device - Used when talking directly to a TPM device file.

? none - Do not initalize a connection with the TPM. Some tools allow for off-tpm options and thus support not using a TCTI. Tools that do not support it will error when attempted to be used without a TCTI connection. Does not support ANY options and MUST BE presented as

the exact text of ?none?.

The arguments to either the command line option or the environment variable are in the form:

<tcti-name>:<tcti-option-config>

Specifying an empty string for either the <tcti-name> or <tcti-option-config> results in the default being used for that portion respectively.

TCTI Defaults

When a TCTI is not specified, the default TCTI is searched for using dlopen(3) semantics. The tools will search for tabrmd, device and mssim TCTIs IN THAT ORDER and USE THE FIRST ONE FOUND. You can query what TCTI will be chosen as the default by using the -v option to print the version information. The ?default-tcti? key-value pair will indicate which of the aforementioned TCTIs is the default.

Custom TCTIs

Any TCTI that implements the dynamic TCTI interface can be loaded. The tools internally use dlopen(3), and the raw tcti-name value is used for the lookup. Thus, this could be a path to the shared library, or a library name as understood by dlopen(3) semantics.

TCTI OPTIONS

This collection of options are used to configure the various known TCTI modules available:

? device: For the device TCTI, the TPM character device file for use by the device TCTI can be specified. The default is /dev/tpm0.

Example: -T device:/dev/tpm0 or export TPM2TOOLS_TCTI=?device:/dev/tpm0?

? mssim: For the mssim TCTI, the domain name or IP address and port number used by the simulator can be specified. The default are 127.0.0.1 and 2321.

Example: -T mssim:host=localhost,port=2321 or export TPM2TOOLS_TCTI=?mssim:host=localhost,port=2321?

? abrmd: For the abrmd TCTI, the configuration string format is a series of simple key value pairs separated by a `,' character. Each

key and value string are separated by a `=' character.

? TCTI abrmd supports two keys:

1. `bus_name' : The name of the tabrmd service on the bus (a string).
2. `bus_type' : The type of the dbus instance (a string) limited to `session' and `system'.

Specify the tabrmd tcti name and a config string of bus_name=com.ex?ample.FooBar:

\--tcti=tabrmd:bus_name=com.example.FooBar

Specify the default (abrmd) tcti and a config string of bus_type=ses?sion:

\--tcti:bus_type=session

NOTE: abrmd and tabrmd are synonymous. the various known TCTI mod?ules.

EXAMPLES

```
tpm2_createprimary -C e -c primary.ctx
tpm2_create -C primary.ctx -u key.pub -r key.priv
tpm2_load -C primary.ctx -u key.pub -r key.priv -c key.ctx
tpm2_quote -Q -c key.ctx -l 0x0004:16,17,18+0x000b:16,17,18
```

NOTES

The maximum number of PCR that can be quoted at once is associated with the maximum length of a bank.

On most TPMs, it means that this tool can quote up to 24 PCRs at once.

That this performs a detached signature.

Returns

Tools can return any of the following codes:

? 0 - Success.

? 1 - General non-specific error.

? 2 - Options handling error.

? 3 - Authentication error.

? 4 - TCTI related error.

? 5 - Non supported scheme. Applicable to tpm2_testparams.

BUGS

Github Issues (https://github.com/tpm2-software/tpm2-tools/issues)

HELP

See the Mailing List (https://lists.01.org/mailman/listinfo/tpm2)