Rocky Enterprise Linux 9.2 Manual Pages on command 'tpm2_nvread.1'

$ man tpm2_nvread.1

tpm2_nvread(1) General Commands Manual tpm2_nvread(1)

NAME

tpm2_nvread(1) - Read the data stored in a Non-Volatile (NV)s index.

SYNOPSIS

tpm2_nvread [OPTIONS] [ARGUMENT]

DESCRIPTION

tpm2_nvread(1) - Read the data stored in a Non-Volatile (NV)s index.

The index can be specified as raw handle or an offset value to the nv

handle range ?TPM2_HR_NV_INDEX?.

OPTIONS

? -C, --hierarchy=OBJECT:

Specifies the hierarchy used to authorize. Supported options are:

? o for TPM_RH_OWNER

? p for TPM_RH_PLATFORM

? <num> where a hierarchy handle or nv-index may be used.

When -C isn?t explicitly passed the index handle will be used to au?

thorize against the index. The index auth value is set via the -p

option to tpm2_nvdefine(1).

? -o, --output=FILE:

File to write data

? -P, --auth=AUTH:

Specifies the authorization value for the hierarchy.

? -s, --size=NATURAL_NUMBER:

Specifies the size of data to be read in bytes, starting from 0 if offset is not specified. If not specified, the size of the data as reported by the public portion of the index will be used.

? --offset=NATURAL_NUMBER:

The offset within the NV index to start reading from.

? --cphash=FILE

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

? --rphash=FILE

File path to record the hash of the response parameters. This is commonly termed as rpHash.

? -n, --name=FILE:

The name of the NV index that must be provided when only calculating the cpHash without actually dispatching the command to the TPM.

? -S, --session=FILE:

The session created using tpm2_startauthsession. This can be used to specify an auxiliary session for auditing and or encryption/decryp? tion of the parameters.

? ARGUMENT the command line argument specifies the NV index or offset number.

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 specifier of:

pcr:sha256:0,1,2,3

specifying AUTH.

COMMON OPTIONS

This collection of options are common to many programs and provide information 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 requested, the tool will provide errors from man on stderr. If the ?no-man? option if specified, or the manpager fails, the short options 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. information 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-op?tion-config> results in the default being used for that portion respec?tively.

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 indi?cate 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 li? brary 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=?de? vice:/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_TC? TI=?mssim:host=localhost,port=2321?

? abrmd: For the abrmd TCTI, the configuration string format is a se? ries 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.d)

EXAMPLES

Read 32 bytes from an index starting at offset 0

```
tpm2_nvdefine -C o -s 32 -a "ownerread|policywrite|ownerwrite" 1

echo "please123abc" > nv.dat

tpm2_nvwrite -C o -i nv.dat 1

tpm2_nvread -C o -s 32 1
```

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)