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### ***Rocky Enterprise Linux 9.2 Manual Pages on command 'tpm2\_pcrextend.1'***

***\$ man tpm2\_pcrextend.1***

tpm2\_pcrextend(1)      General Commands Manual      tpm2\_pcrextend(1)

NAME

tpm2\_pcrextend(1) - Extends a PCR.

SYNOPSIS

tpm2\_pcrextend [OPTIONS] PCR\_DIGEST\_SPEC

DESCRIPTION

tpm2\_pcrextend(1) - Extends the pcrs with values indicated by PCR\_DIGEST\_SPEC.

A PCR\_DIGEST\_SPEC is defined as follows:

? A numerical PCR identifier.

? A colon followed by the algorithm hash specification.

The algorithm hash specification is as follows: \* The algorithm friend?

ly name or raw numerical. \* An equals sign. \* The hex hash value.

Example Digest Specification

4:sha1=f1d2d2f924e986ac86fdf7b36c94bcdf32beec15

Note: Multiple specifications of PCR and hash are allowed. Multiple hashes cause the PCR to be extended with both hashes. Multiple same PCR values cause the PCR to be extended multiple times. Extension is

done in order from left to right as specified. At most 5 hash extensions per PCR entry are supported. This is to keep the parser simple.

## OPTIONS

This tool accepts no tool specific options.

## 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 is 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.

## 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 simulator.

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

? none - Do not initialize 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.example.FooBar:

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

Specify the default (abrmd) tcti and a config string of bus\_type=session:

```
\-tcti:bus_type=session
```

NOTE: abrmd and tabrmd are synonymous.

PCR bank specifiers (common/pcr.md)

## EXAMPLES

Extend PCR 4's SHA1 bank with a hash

```
tpm2_pcrextend 4:sha1=f1d2d2f924e986ac86fdf7b36c94bcdf32beec15
```

Extend PCR 4's SHA1 and SHA256 banks with hashes

```
tpm2_pcrextend 4:sha1=f1d2d2f924e986ac86fdf7b36c94bcdf32beec15,sha256=b5bb9d8014a0f9b1d61e21e796d78dcccdf1352f23cd32812f4850b878ae4944c
```

Extend PCR 4's SHA1 and PCR 7's SHA256 bank with hashes

```
tpm2_pcrextend 4:sha1=f1d2d2f924e986ac86fdf7b36c94bcdf32beec15
```

```
7:sha256=b5bb9d8014a0f9b1d61e21e796d78dcccdf1352f23cd32812f4850b878ae4944c
```

## 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>)

tpm2-tools

tpm2\_pcrextend(1)