

dm-crypt

Device-Mapper's "crypt" target provides transparent encryption of block devices using the kernel crypto API.

For a more detailed description of supported parameters see: <https://gitlab.com/cryptsetup/cryptsetup/wikis/DmCryp>

Parameters:

```
<cipher> <key> <iv_offset> <device path> \  
<offset> [<#opt_params> <opt_params>]
```

<cipher>

Encryption cipher, encryption mode and Initial Vector (IV) generator.

The cipher specifications format is:

```
cipher[:keycount]-chainmode-ivmode[:ivopts]
```

Examples:

```
aes-cbc-essiv:sha256  
aes-xts-plain64  
serpent-xts-plain64
```

Cipher format also supports direct specification with kernel crypt API format (selected by capi: prefix). The IV specification is the same as for the first format type. This format is mainly used for specification of authenticated modes.

The crypto API cipher specifications format is:

```
capi:cipher_api_spec-ivmode[:ivopts]
```

Examples:

```
capi:cbc(aes)-essiv:sha256  
capi:xts(aes)-plain64
```

Examples of authenticated modes:

```
capi:gcm(aes)-random  
capi:authenc(hmac(sha256),xts(aes))-random  
capi:rfc7539(chacha20,poly1305)-random
```

The /proc/crypto contains a list of currently loaded crypto modes.

<key>

Key used for encryption. It is encoded either as a hexadecimal number or it can be passed as <key_string> prefixed with single colon character (':') for keys residing in kernel keyring service. You can only use key sizes that are valid for the selected cipher in combination with the selected iv mode. Note that for some iv modes the key string can contain additional keys (for example IV seed) so the key contains more parts concatenated into a single string.

<key_string>

The kernel keyring key is identified by string in following format: <key_size>:<key_type>:<key_description>.

<key_size>

The encryption key size in bytes. The kernel key payload size must match the value passed in <key_size>.

<key_type>

Either 'logon', 'user', 'encrypted' or 'trusted' kernel key type.

<key_description>

The kernel keyring key description crypt target should look for when loading key of <key_type>.

<keycount>

Multi-key compatibility mode. You can define <keycount> keys and then sectors are encrypted according to their offsets (sector 0 uses key0; sector 1 uses key1 etc.). <keycount> must be a power of two.

<iv_offset>

The IV offset is a sector count that is added to the sector number before creating the IV.

<device path>

This is the device that is going to be used as backend and contains the encrypted data. You can specify it as a path like /dev/xxx or a device number <major>:<minor>.

<offset>

Starting sector within the device where the encrypted data begins.

<#opt_params>

Number of optional parameters. If there are no optional parameters, the optional parameters section can be skipped or #opt_params can be zero. Otherwise #opt_params is the number of following arguments.

Example of optional parameters section:

```
3 allow_discards same_cpu_crypt submit_from_crypt_cpus
```

allow_discards

Block discard requests (a.k.a. TRIM) are passed through the crypt device. The default is to ignore discard requests.

same_cpu_crypt

submit_from_crypt_cpus

no_read_workqueue

no_write_workqueue

integrity:<bytes>:<type>

sector_size:<bytes>

iv_large_sectors

[illegible]