Red Hat Enterprise Linux Release 9.2 Manual Pages on 'nvme-format.1' command

$ man nvme-format.1

NVME-FORMAT(1)   NVMe Manual   NVME-FORMAT(1)

NAME

    nvme-format - Format an NVMe device

SYNOPSIS

    nvme format <device> [--namespace-id=<nsid> | -n <nsid>]

           [--lbaf=<lbaf> | -l <lbaf>]

           [--block-size=<block size | -b <block size>]

           [--ses=<ses> | -s <ses>]

           [--pil=<pil> | -p <pil>]

           [--pi=<pi> | -i <pi>]

           [--ms=<ms> | -m <ms>]

           [--reset | -r]

           [--force]

           [--timeout=<timeout> | -t <timeout>]

DESCRIPTION

    For the NVMe device given, send an nvme Format Namespace admin command

    and provides the results.

    The <device> parameter is mandatory and may be either the NVMe

    character device (ex: /dev/nvme0), or a namespace block device (ex:

    /dev/nvme0n1). If the character device is given, and the controller

    does not support formatting of particular namespaces (ID_CTRL.FNA bit 0

    enabled), then all namespaces will be formatted. If FNA is disabled,

    then the namespace identifier must be specified with the namespace-id

option; specify a value of 0xffffffff to send the format to all namespaces. If the block device is given, the namespace identifier will default to the namespace ID of the block device given, but can be overridden with the same option.

Note, the numeric suffix on the character device, for example the 0 in /dev/nvme0, does NOT indicate this device handle is the parent controller of any namespaces with the same suffix. The namespace handle?s numeral may be coming from the subsystem identifier, which is independent of the controller?s identifier. Do not assume any particular device relationship based on their names. If you do, you may irrevocably erase data on an unintended device.

On success, the program will automatically issue BLKRRPART ioctl to force rescanning the namespaces. If the driver is recent enough, this will automatically update the physical block size. If it is not recent enough, you will need to remove and rescan your device some other way for the new block size to be visible, if the size was changed with this command.

OPTIONS

-n <nsid>, --namespace-id=<nsid>

Send the format command for the specified nsid. This can be used to override the default value for either character device (unspecified) or the block device (result from NVME_IOCTL_ID).

-l <lbaf>, --lbaf=<lbaf>

LBA Format: This field specifies the LBA format to apply to the NVM media. This corresponds to the LBA formats indicated in the Identify Namespace command. Conflicts with --block-size argument. Defaults to 0.

-b <block size>, --block-size=<block size>

Block Size: This field is used to specify the target block size to format to. Potential lbaf values will be scanned and the lowest numbered will be selected for the format operation. Conflicts with --lbaf argument.

-s <ses>, --ses=<ses>

Secure Erase Settings: This field specifies whether a secure erase should be performed as part of the format and the type of the secure erase operation. The erase applies to all user data, regardless of location (e.g., within an exposed LBA, within a cache, within deallocated LBAs, etc). Defaults to 0.

Value	Definition
0	No secure erase operation requested
1	User Data Erase: All user data shall be erased, contents of the user data after the erase is indeterminate (e.g., the user data may be zero filled, one filled, etc). The controller may perform a cryptographic erase when a User Data Erase is requested if all user data is encrypted.
2	Cryptographic Erase: All user data shall be erased cryptographically. This is accomplished by deleting the encryption key.
3?7	Reserved

Protection Information Location: If set to ?1? and protection information is enabled, then protection information is transferred as the first eight bytes of metadata. If cleared to ?0? and protection information is enabled, then protection information is transferred as the last eight bytes of metadata. Defaults to 0.

-i <pi>, --pi=<pi>

Protection Information: This field specifies whether end-to-end data protection is enabled and the type of protection information. Defaults to 0.

Value	Definition
0	Protection information is not enabled
1	Protection information is enabled, Type 1
2	Protection information is enabled, Type 2
3	Protection information is enabled, Type 3
4?7	Reserved

-m <ms>, --ms=<ms>

Metadata Settings: This field is set to ?1? if the metadata is transferred as part of an extended data LBA. This field is cleared to ?0? if the metadata is transferred as part of a separate buffer. The metadata may include protection information, based on the Protection Information (PI) field. Defaults to 0.

-r, --reset

Issue a reset after successful format. Must use the character device for this.

--force

Just send the command immediately without warning of the implications.

-t <timeout>, --timeout=<timeout>

Override default timeout value. In milliseconds.

EXAMPLES

- ? Format the device using all defaults:

  # nvme format /dev/nvme0n1

- ? Format namespace 1 with user data secure erase settings and protection information:

  # nvme format /dev/nvme0 --namespace-id=1 --ses=1 --pi=1

NVME

Part of the nvme-user suite

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