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Cigent CLI User Guide

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Cigent CLI Utility

Overview

This utility is a standalone application designed to be used for configuring and interacting with Cigent solid state storage devices. The utility is available for Windows and Linux. The application interface is the same for both the Windows and the Linux versions. The utility must be run with administrative privileges due to the increased access rights required to interact with low level storage interfaces.

The following help message may be accessed at any time by running the application without any parameters.

```
c:\>CigentCLI
```

```
------------------------------------------------------------
Drive Selection
------------------------------------------------------------
Options -l and -d are mutually exclusive but one must be specified
-l # print a list of attached drives
-d <drive> # drive path or serial
------------------------------------------------------------
PBA Support
------------------------------------------------------------
For drives that are configured with Cigent PBA, the username
must be specified
-user <username> # PBA username to use
------------------------------------------------------------
Protection
------------------------------------------------------------
-lock <password> <range>   # lock specified range
-unlock <password> <range> # unlock specified range
------------------------------------------------------------
Config
------------------------------------------------------------
-init <password> # initialize drive for use (8-32 character password)
-add <password> <range> <size in GiB (0 for all available)> [-ntfs/-ext/-none] # add
protected storage
   Optional: -ntfs (format ntfs) / -ext (format ext) / -none (do not format)
   If not specified, it will be formatted ext
-list <password> # list all configured ranges
------------------------------------------------------------
Deconfig
------------------------------------------------------------
-remove <password> <range> # remove protected storage !!DESTRUCTIVE TO RANGE!!
-deinit <password> # deinitialize drive using password !!DESTRUCTIVE TO ALL RANGES!!
-psid_revert <psid> # fully erase drive using PSID !!DESTRUCTIVE TO ENTIRE DRIVE!!
-erase <password> # fully erase drive using password !!DESTRUCTIVE TO ENTIRE DRIVE!!
------------------------------------------------------------
PBA Specific Functions (NOTE: specified user must be an admin)
You MUST specify the pba user (-user <user>) for these functions
```

```
-------------------------------------------------------------
-eraseafter <password> <epoch (0 to clear)> # erase drive(s) after date !!DESTRUCTIVE
TO ENTIRE DRIVE!!
   NOTE: If PBA is booted and the current epoch is greater than the specified date,
     the PBA drive as well as any secondary PBA drive(s) will be automatically erased
-enrollcode <admin password> <desired code> <use count (0 for unlimited)> <expiration
epoch (0 for none)> # add a self enroll code to the pba
-listcodes <admin password> # display information about current enroll codes
-removecode <admin password> <code id> # remove specified enroll code (id is returned
by -listcodes and when adding a code)
-removeallcodes <admin password> # remove all enroll codes
-activate <admin password> # activate a disabled pba
-------------------------------------------------------------
Example Usage
-------------------------------------------------------------
Initialize drive, add a 20GB ntfs formatted range, and unlock it:
CigentCLI -d \\.\PHYSICALDRIVE1 -init mypassword
CigentCLI -d \\.\PHYSICALDRIVE1 -add mypassword 1 20 -ntfs
CigentCLI -d \\.\PHYSICALDRIVE1 -unlock mypassword 1
Unlock a range on a Cigent PBA drive:
CigentCLI -d \\.\PHYSICALDRIVE1 -user myuser -unlock mypassword 1
Set the eraseafter date on a PBA drive
CigentCLI -d \\.\PHYSICALDRIVE1 -user myuser -eraseafter mypassword 1792333922
```

Linux Configuration

If a SATA Cigent drive is to be used with a Linux operating system, the following parameter must be passed to the grub command line:

```
libata.allow_tpm=1
```

If desired, modify /etc/default/grub and add it to GRUB_CMDLINE_LINUX_DEFAULT

Example:

Change: `GRUB_CMDLINE_LINUX_DEFAULT="quiet splash"`
To: `GRUB_CMDLINE_LINUX_DEFAULT="quiet splash libata.allow_tpm=1"`

Run update-grub and reboot after making the change. Some systems may require a full power cycle for the change to take effect.

Scanning for Drives

The first step before interacting with a Cigent drive is to scan for them on the system. The device scan will only search for and list Cigent storage devices.

```
c:\>CigentCLI -l

1) Model: [PCIe SSD] S/N: [R6E10872090F00000012] FW: [SCFL13.1] Path:
[\\.\PHYSICALDRIVE1]
```

Once the desired device is located, it can be specified on the command line using the *-d* switch. The drive may be specified by its path or by its serial number. Every command, with the exception of the *-l* command, requires that a drive be specified.

```
-d \\.\PHYSICALDRIVE1
```

```
-d R6E10872090F00000012
```

Cigent Pre-Boot Authentication Support

The Cigent CLI utility has support for drives configured with a Cigent PBA. In order to work with a PBA drive, the username must be specified. To specify a PBA username, the -user option may be used. The example below shows how to unlock range 1 on a PBA configured drive.

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -user myuser -unlock mypassword 1
```

Protection Functions

Locking and Unlocking Protected Storage

Read/write access to each range may be configured using the *-lock* and *-unlock* commands.

Lock

Locking a range will unmount the volume associated with it (if applicable) and will lock the range at the drive level to prevent read/write access.

Parameters: `-lock <password> <range number>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -lock mypassword 1
```

Unlock

Unlocking a range will unlock the range at the drive level to allow read/write access and mount the volume associated with it (if applicable).

Parameters: `-unlock <password> <range number>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -unlock mypassword 1
```

Configuration Functions

Initialization

The security subsystem must be initialized first. The provided password must be between 8 and 32 characters.

Parameters: `-init <password>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -init mypassword
```

ⓘ	If your drive is already configured with Cigent PBA the -init function is not used

Adding Protected Storage

The drive supports 8 ranges that may be configured across the full span of the drive. Protected storage volumes may be set up using these locking ranges. Protected storage volumes function just like any other formatted storage volume with the added benefit that they may be locked and unlocked at the device level. They may also be quickly erased/removed. Protected Storage volumes are created by aligning a protected storage range on the same range occupied by a data partition. This allows the content of the partition to be protected using the various range protection options.

Parameters: `-add <password> <range number> <size in GiB: 0 for all available> [-ntfs/-ext/-none]`

File system options:

- -ntfs: format the drive using an NTFS file system
- -ext: format the drive using an EXT file system
- -none: do not format the drive (this will create an empty partition with no file system)

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -add mypassword 1 20 -ntfs
```

ⓘ	If you do not pick from one of the available file system options (-ntfs/-ext/-none) the storage will be formatted using a operating system dependent default (NTFS for Windows, EXT for Linux)

ⓘ	The -ext option is only available on Linux. The -ntfs option is available on Windows as well as Linux systems that support NTFS.

Displaying Range Configuration

The current range configuration may be displayed using the -list command. The *Range* number is the identifier that is used to specify the range to interact with. The command will also display if the range is locked or unlocked. Lastly, a count of the number of ranges currently in use and the total available will be displayed.

Parameters: `-list <password>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -list mypassword

----------------------------------------
```

```
Configured Ranges
Range 1: Locked
Range 2: Unlocked
----------------------------------------
2 of 8 ranges used
```

Deconfiguration Functions

Various data and configuration removal methods are available from full drive deinitialization to targeted range erasures and removals. A PSID revert method has also been provided that will allow the data to be erased in the event the drive password is forgotten.

Removing Protected Storage

⚠	This function will destroy all data on the specified range.

Protected Storage volumes are created by aligning a protected storage range on the same range occupied by a data partition. This function removes the partition as well as the protected storage range that is aligned with it.

Parameters: `-remove <password> <range number>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -remove mypassword 1
```

De-Initializing Security Subsystem

⚠	This function will destroy all data on all configured ranges

Protected Storage volumes are created by aligning a protected storage range on the same range occupied by a data partition. This function removes ALL range aligned partitions as well as the protected storage range that is aligned with them. Data that is not in a secure range will NOT be removed.

Parameters: `-deinit <password>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -deinit mypassword
```

PSID Revert

⚠	This function will destroy all data on the drive.

The *PSID Revert* function erases and removes all ranges, ALL data on the drive, and deinitializes the security subsystem. The PSID is a value printed on the drive and can be used to erase the data in the event the drive password has been forgotten.

Parameters: `-psid_revert <psid>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -psid_revert 8484832FJDFASVNVJ3834R94R4TVJNF2
```

Erase

⚠	This function will destroy all data on the drive.

The *Erase* function erases and removes all ranges, ALL data on the drive, and deinitializes the security subsystem. This function begins by performing a cryptographic erase. On supported drives/systems, the cryptographic erase will be followed by a full block level erase and an erasure verification will be performed. The utility will also output the status of the blocks for drives that support erasure verification. Please note that on setups that do not support full block level erasures, the erasure verification will fail (however the result of the cryptographic erasure will be reported). Full block erasures are supported with the following setups:

- Any Cigent drive that is mounted internally in a Linux based system
- Version 2 of any Cigent drive that is mounted internally or in a USB enclosure on a Windows or Linux based system

Parameters: `-erase <password>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -erase mypassword
```

Cigent Pre-Boot Specific Functions

Some Cigent CLI utility functions are only available for drives configured with a Cigent PBA. The following section describes these functions. The -user parameter MUST be used with these functions.

Erase-After Date Configuration

⚠	This function will destroy all data on the drive as well as all data on any secondary drives that are being protected by the PBA.

This function allows the user to configure an end of life date for a Cigent PBA protected drive and any secondary drives being protected by the Cigent PBA. The date is set as a Unix epoch. On startup, the PBA will verify that the current epoch is greater than the erase-after epoch. If it is, the system will function normally. If the current epoch is greater than or equal to the erase-after date, the erasure will be automatically performed.

Parameters: `-user <user> -eraseafter <password> <epoch (0 to clear)>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -user myuser -eraseafter mypassword 1728911412
```

Smart Card Enroll Code Configuration

This set of features allows the user to manage enrollment codes that can be used to allow a user to self-enroll their smart card on a drive with a Cigent PBA installed. Once an enrollment

code has been added, the user may boot to the Cigent PBA, enter an enrollment code, and use their smart card to register as a user on the Cigent PBA..

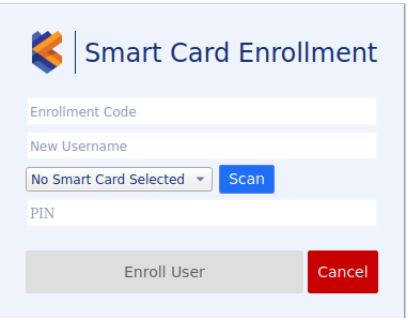
Add Enroll Code

The -enrollcode command allows the user to add an enrollment code. The following parameters are required:

- Admin password - the password for the specified (-user <user>) admin user
- Desired code - the enrollment code to add. Must meet Cigent PBA password requirements.
- Use count - the number of times the code may be used (0 for unlimited)
- Expiration epoch - epoch timestamp specifying when the enrollment code should expire (0 for no expiration)

Note that if an existing enrollment code is specified, it will be replaced. After the command completes, a Code Id will be returned.

When an enrollment code is added to the Cigent PBA, a 'Self enroll' link will be added to the Cigent PBA login screen. Clicking the link will display a dialog that may be used to self-enroll a user (Smart Card required). Following is an example of the dialog that will be presented:



Parameters: `-user <user> -enrollcode <password> <code> <use count> <expiration>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -user myuser -enrollcode mypassword EnrollMe_01* 1 1741984134
```

List Enroll Codes

The -listcodes command will display information about all active enrollment codes. Information includes the code id, expiration, and use count.

Parameters: `-user <user> -listcodes <password>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -user myuser -listcodes mypassword
```

Remove Code(s)

There are two commands that may be used to remove enrollment codes. The -removecode command removes the code associated with the specified Code Id. The -removeallcodes will remove all enrollment codes.

Parameters: `-user <user> -removecode <password> <code id>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -user myuser -removecode mypassword 4kmQ106C
```

Parameters: `-user <user> -removeallcodes <password>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -user myuser -removeallcodes mypassword
```

Activate a Disabled PBA

This function allows the user to activate a PBA that was disabled from the PBA maintenance page.

Parameters: `-user <user> -activate <password>`

```
c:\>CigentCLI -d \\.\PHYSICALDRIVE1 -user myuser -activate mypassword
```