

Sentinel[®]LDK

Sentinel HL Drive Flash Partitioning Utility v.6.3
User Guide



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Sentinel HL Drive—Overview

Sentinel HL Drive is a device that combines the powerful copy-protection and licensing capabilities of the Sentinel HL Max key with the convenience of a mass storage drive.



The USB-based Sentinel HL Drive is available in a variety of flash drive sizes. Sizes are updated according to market preferences. Your SafeNet representative will advise you on the sizes currently available.

Sentinel HL Drive includes Sentinel HL Max key functionality and a flash memory that can be used as a mass storage device and/or for a CD-ROM emulator.

Before you load your applications and data on Sentinel HL Drive, you can protect it using Sentinel LDK Envelope and Sentinel LDK Data Encryption utility. For more information about using Sentinel LDK Data Encryption utility, see the *Sentinel LDK Software Protection and Licensing Guide*.

Using Sentinel HL Drive Partitioning utility or Partitioning API, you can load your Sentinel LDK-protected applications and data onto the CD-ROM partition of a Sentinel HL Drive, and ship it to your customers. Your customer can save files to Sentinel HL Drive, or load additional software on it, thus utilizing the convenience of disk-on-key functionality.

By default, the Sentinel HL Drive flash memory is fully allocated as a mass storage device. Using the Partitioning utility or the Partitioning API, you can create a CD-ROM emulation partition on which you can load your software data.

Chapter 2

Sentinel HL Drive Partitioning Utility

This chapter describes how to use the Sentinel HL Drive Partitioning utility to partition your Sentinel HL Drives.

The Sentinel HL Drive Partitioning utility and Partitioning API enable you to:

- Partition the Sentinel HL Drive to create a CD-ROM emulator area
- Specify the size of the flash memory relative to the CD-ROM emulator
- Load files to the CD-ROM emulator

CAUTION:

You must connect the Sentinel HL Drive to a certified PC, in which the USB ports were evaluated as a Limited power source according to UL60950 standard 2.5.

Running the Partitioning Utility

Partitioning can only be performed on a single Sentinel HL Drive at a time. Before you start, connect a Sentinel HL Drive to your computer and ensure that you have the Sentinel Run-time Environment installed.

You can specify what percentage of the available memory will be used as a mass storage device (flash memory) and what percentage will be for CD-ROM emulation. In addition, you can load applications and data to the Sentinel HL Drive.

Before You Start

Before you run the Partitioning utility, consider the following points:

- Sentinel HL Drive Partitioning utility is supported for Windows XP and Windows 2003. (Note however that, at run-time, the Sentinel HL Drive can run on any platform that is supported by Sentinel LDK.)
- You can only copy folders, not individual files.
- You can only copy folders from the sub-directory of a drive, not from the root directory.
- When creating a CD-ROM partition, data must be copied into the area to prevent the operating system recognizing it as a non-formatted CD-ROM.
- When specifying the ROM volume, include a buffer to ensure that there is room for files that may be slightly larger than their stated size.
- The contents of the INI file in which the partitioning parameters are stored can only contain ASCII characters (saved as ANSI encoding).

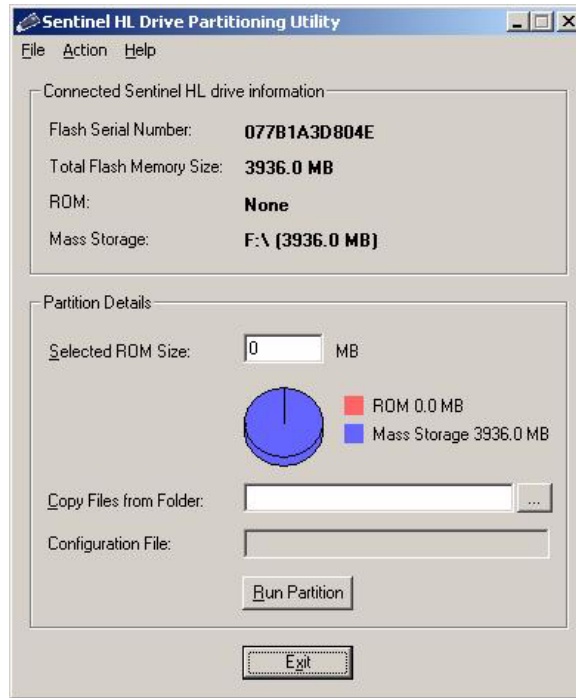
To partition a Sentinel HL Drive:

1. Connect a Sentinel HL Drive to your computer.
2. From your program file directory, select:

...\Program Files\SafeNet Sentinel\Sentinel LDK\Vendor Tools\Utilities\Drive Partition\HHLD Partition.exe

(For Windows x64, select \Program Files (x86)\...)

The application opens.



The window is divided into two sections:

- ◆ Information about the connected Sentinel HL Drive.
This area of the window provides the following information:
 - Serial number of the Sentinel HL Drive
 - Total volume of the flash memory
 - Total volume of ROM
 - Total volume of mass storage memory
- ◆ Information about how the flash memory is partitioned.
This area of the window enables you to specify the following partitioning parameters:
 - Size of ROM
 - Name and location of files that are to be copied to the ROM. This field is only enabled when you have specified a ROM size.
Note: You cannot copy data from a CD or DVD.
 - Name and location of configuration file.

3. Specify the required partition parameters. The pie chart in the window graphically displays the proportion of ROM to mass memory that will be allocated according to your specifications.
 4. Click **Browse** to navigate to and select the folder that contains the files that are to be copied to the ROM, if required.
-

Note:

If you want to utilize the auto-run function, you must place an auto-run file in the root of the selected folder.

5. Click **Run Partition**.
-

WARNING!

A message is displayed, warning you that all data on the connected Sentinel HL Drive will be erased.

Click **OK** to proceed. You are prompted to wait while the partitioning is performed.

Alternatively, click **Cancel** to quit the partitioning process.

6. When prompted, at the end of the partitioning process, disconnect and reconnect the Sentinel HL Drive. A message is displayed to indicate that the partitioning has been completed successfully.
7. Click **OK**. The application window displays updated information about the partitioned Sentinel HL Drive.

Saving Your Settings

You can save the partitioning parameters that you specify in an INI file for future use.

To save the partitioning specifications:

1. In the Sentinel HL Drive Partitioning Utility window, select **File > Save As**.
2. Name your file and click **Save**. The saved file and path is displayed in the **Configuration File** field of the main application window.

You can open a saved file by selecting **File > Open** in the Sentinel HL Drive Partitioning Utility window.

Using the Sentinel HL Drive Partitioning API

This chapter describes the structure and functions provided in the Sentinel HL Drive Partitioning API, and how to use them to partition your Sentinel HL Drives.

hasp_drv_DriveInfo Structure

Contains information about the Sentinel HL Drive.

```
typedef struct hasp_drv_DriveInfo
{
    DWORD    dwSize;
    BYTE     bhasp_drv_MassStorageDriveLetter;
    BYTE     bhasp_drv_RomDriveLetter;
    DWORD    dwMassStoragePartitionSize;
    DWORD    dwRomPartitionSize;
    BYTE     bSerialNum[12+1];
    BYTE     bVendorName[24+1];
    BYTE     bProductName[24+1];
    BYTE     bMassStorageProductInfo[16+1];
    BYTE     bRomProductInfo[16+1];
    BYTE     bFWVersion[5+1];
} hasp_drvDriveInfo
```

Members

dwSize	Size of the structure
bhasp_drv_ MassStorageDriveLetter	Drive letter of the mass storage partition
bhasp_drv_ RomDriveLetter	Drive letter of the ROM partition
dwMassStorage PartitionSize	Size of the mass storage partition (sector 512 bytes)
dwRomPartitionSize	Size of the ROM partition (sector 512 bytes)
bSerialNum[12+1]	Serial number (between 6 and 12 characters)
bVendorName[24+1]	USB vendor string
bProductName[24+1]	USB product string
bMassStorageProduct Info[16+1]	Inquiry product
bRomProductInfo[16+1]	Inquiry product
bFWVersion[5+1]	Firmware version of the flash controller (e.g. "01.00")

hasp_drv_GetDLLVersionNum()

Description

This function returns the version number of the DLL.

Syntax

```
CDFS_DLL_API DWORD GetDLLVersionNum()
```

Parameters

There are no input parameters for this function.

Return Values

This function returns the DLL version number. For example: 0x1001 represents version 1.0.0.1

hasp_drv_EnumDrives()

Description

This function retrieves partition information.

Syntax

```
CDFSDDL_API hasp_drv_EnumDrives(  
    hasp_drvDriveInfo  *pDriveInfoList,  
    DWORD              *pdwListSize,  
    DWORD              dwFlags,  
    );
```

Parameters

pDriveInfoList	Input/output parameter. When the parameter is Input, it is called with <code>Null</code> in order to retrieve the <code>pdwListSize</code> . When the parameter is Output, it retrieves the list of partition information.
pdwListSize	Count of allocated partition information, or the actual number of the list member
dwFlags	Reserved for future use

Return Values

0	Request was successfully completed
0x101	Unable to find Sentinel HL Drive
0x102	Unable to retrieve partition information (string, firmware version, etc.)
0x103	Unable to retrieve capacity

hasp_drv_SetROMPartitions()

Description

This function specifies the ROM partition for the Sentinel HL Drive.

Syntax

```
CDFSDDL_API hasp_drv_SetROMPartitions (  
    BYTE    bhasp_drv_RomDriveLetter,  
    BYTE    bmassStorageDrive,  
    DWORD    dwROMSize,  
    DWORD    dwFlags,  
);
```

Parameters

bhasp_drv_RomDriveLetter	Drive letter of ROM partition to which data will be written
bMassStorageDrive	Drive letter of mass storage partition to which data will be written
dwROMSize	Size of the ROM partition in megabytes. When the value is 0, the ROM partition is deleted.
dwFlags	Reserved for future use

Return Values

0	Request was successfully completed
0x201	Input parameter error
0x202	Unable to retrieve partition information
0x203	Unable to retrieve flash memory size
0x204	Size of ROM incorrectly specified (Minimum CD-ROM or removable drive size is 1 MB)
0x205	Unable to retrieve partition size
0x206	Erase data error: input ROM size error (Minimum CD-ROM or removable drive size is 1 MB)
0x207	Erase data error: ROM partition specification error

hasp_drv_WriteROMData()

Description

This function writes the content of the specified folder to the ROM partition.

Syntax

```
CDFS_DLL_API hasp_drv_WriteROMData(  
    BYTE    bhasp_drvDriveLetter,  
    WCHAR   *strRomSource,  
    WCHAR   *strRomLabel,  
    DWORD   dwFlags,  
    );
```

Parameters

bhasp_drvDriveLetter	Drive letter of ROM partition to which content will be written
strRomSource	Path to the folder containing the data to be written to the ROM partition
strRomLabel	Label of the ROM partition. If 0, no label is assigned.
dwFlags	Reserved for future use

Return Values

0	Request was successfully completed
0x501	Input drive error
0x502	Input parameter error (e.g. Directory path error)
0x503	Unable to create volume descriptor
0x504	Unable to create path table
0x505	Buffer overflow
0x506	Unable to create Directory record
0x507	Unable to update table data to Sentinel HL Drive

0x508	Unable to update file data to Sentinel HL Drive
0x50F	Over driver size
0x510	Unable to retrieve partition size
0x5F1	CD-ROM image error
0x5F2	CD-ROM image already on CD-ROM partition

Usage Note

If the ROM partition drive path (for example, G:\) does not have an associated folder, it will not be recognized as a formatted CD-ROM.

hasp_drv_ComputeROMSize()

Description

This function calculates the size of the directory content.

Syntax

```
CDFS_DLL_API hasp_drv_ComputeROMSize(  
    BYTE    bhasp_drvDriveLetter,  
    WCHAR   *strRomSource,  
    DWORD   *pdwCalculateRomSize,  
    );
```

Parameters

bhasp_drvDriveLetter	Letter of ROM partition to which content will be written
strRomSource	Path to the folder containing the data to be written to the ROM partition
pdwCalculateRomSize	Size of the directory content (Unit: 512 bytes)

Return Values

0	Request was successfully completed
0x601	Input drive error
0x602	Input parameter error (e.g. Directory path error)
0x603	Unable to create volume descriptor
0x604	Unable to create path table
0x605	Buffer overflow
0x606	Unable to create Directory record
0x610	Unable to retrieve size of Sentinel HL Drive

Usage Note

If the ROM partition drive path (for example, G:\) does not have an associated folder, it will not be recognized as a formatted CD-ROM.

hasp_drv_SetSerial()

Description

This function defines a serial number.

Syntax

```
CDFSDDL_API hasp_drv_SetSerial(  
    BYTE    bDrive,  
    BYTE    *bSerialNum[12],  
    DWORD   dwFlags  
);
```

Parameters

bDrive	Letter of mass storage partition to which content will be written
bSerialNum	Serial number of mass storage partition (max. 12 bytes)
dwFlags	Reserved for future use

Return Values

0	Request was successfully completed
0x401	Unable to retrieve info
0x402	Unable to update serial number

Troubleshooting

This chapter describes problems you may encounter when using your Sentinel HL Drives and their solutions.

Data on a Sentinel HL Drive plays as soon as the Sentinel HL Drive is connected

This behavior is the result of the auto-run feature starting when a Sentinel HL Drive is connected to a computer. This behavior does not occur during initialization, but can be disruptive when multiple initializations are being performed.

Workaround:

The auto-run feature can be temporarily disabled. For instructions on disabling the auto-run feature, go to:

[http://msdn.microsoft.com/en-us/library/windows/desktop/cc144204\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/windows/desktop/cc144204(v=vs.85).aspx)

New drive, or mapped network drive, unavailable in Windows Explorer

In Windows XP, connection of a Sentinel HL Drive can cause a collision with existing mapped network drives. Microsoft acknowledges that this a problem in the Microsoft products.

Workaround:

The workaround provided by Microsoft is available at:

<http://support.microsoft.com/?id=297694>