Virtual Storage Device Emulator

Command Line Interface Specification

Version 1.3

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1. Introduction

1.1. Command line interface module

Command line interface (CLI) module is intended for automation of virtual hardware configuration procedures. CLI module can be invoked either manually or by the other application or script.

CLI module has name VsdeCli.exe. It is located in the main installation directory of Virtual Storage Device Emulator product. The module is Win32 console application.

1.2. General command line format

The general format of the command line is the following:

```
[Path\]VsdeCli[.exe] {command} [options] [parameter1 [parameter2 …
[parameter]…]]
```

Where

Path is either full or relative path to the folder where the module is located. If Virtual Storage Device Emulator product is installed into default folder the module is located in **C:\Program Files\Virtual Storage Device Emulator** folder.

VsdeCli.exe is the name of the executable module.

Command is the specification of configuration action to do. Command text is case insensitive. This argument is mandatory. The set of supported commands is described in the chapter **Command reference**.

Options are zero or more command line options. The format of the command line options is described in the section **Command line options**. The names and the values of the supported command line options depend on the specified command.

Parameters are zero or more command line arguments that provide additional information for command being executed. The format and the values of the command parameters depend on the specified command. More detailed information on command parameters is provided in the sections for all supported commands.

1.3. Command line options

The command line option has the following format:

```
-Name[ {Numerical value|Text value}]
```

or

```
/Name[ {Numerical value|Text value}]
```

Where

Name is the case sensitive option name. The option name may include one or more characters. The dash ('-') or slash ('/') character should precede the option name. If the option has numerical or text value the value should be separated from the option name by the space character. If the option does not have a value it is a Boolean option. If such the option is present in the command line the True value is assumed. Otherwise the False is assumed as a Boolean option value.

Numerical value is the decimal value of the numerical option.

Text value is the text value of the text option. If the text itself includes space character or other white space characters the text string should be enclosed in double quotes.

If the option includes the value of either type the name and the value should be separated by the space character.

1.4. Return code

CLI module returns the integer code when it finishes. The return code is a sign of whether the module did its task successfully or certain error occurred during the execution.

The following values are defined for the return code.

Value	Description

0	Successful completion.
1	Generic failure (unhandled internal error).
2	Wrong command line specified.
3	Invalid command is specified.
4	Invalid value for the numerical or text command line option specified.
5	Invalid value for command line parameter specified.
6	Failed to initialize the API library.
7	Insufficient system resources.
8	Failed file I/O while reading/writing the data from/to the file on hard disk.
9	Timeout expired.

1.5. Command output

When CLI module finishes command execution it prints to **stdout** device the information generated by the command. Depending on command type the output information can be one of the following:

- List of uniform items. Output of this type is typically generated by enumeration commands. All items have the same format. If item includes more than one field the tabulation ('\t') character is inserted between the fields.

- List of unique values. Output of this type is typically generated by commands that return properties of the objects. Each item in the list has the format **name: value**. Name is unique name of the property. Value is the value of the property. The value type depends on the property: boolean, numerical, and text.

Optionally the list may include the header line that makes the perception of information easier.

If error occurred during command execution the error information is printed to **stdout** device.

1.6. Virtual hardware object identification

All virtual hardware objects have unique GUID identifiers. The identifier remains unchanged during whole lifecycle of the object. The following objects are identified by GUIDs:

- Interfaces. Interface object identifier is provided by the operating system.

- SCSI targets. SCSI target object identifier is generated during SCSI target object creation.

- Logical units. Logical unit object identifier is generated during logical unit object creation.

Interface bus is identified by the numerical integer number. For virtual storage controller interface and other interfaces with fixed buses the bus identifier is zero-based sequential number. For iSCSI interface the bus identifier is TCP-port number.

Virtual connection between interface bus and SCSI target is identified by the combination of interface object identifier, bus identifier, and SCSI target object identifier.

Virtual medium is identified by unsigned integer 4-byte value that is unique only for the host computer system where core service is running.

2. Command reference

2.1. AddConnection

AddConection command adds new virtual connection between interface bus and SCSI target.

Command format:

```
VsdeCli.exe AddConnection interface bus target SCSI_ID
```

Command parameters:

interface

Interface object identifier.

bus

Interface bus identifier.

target

SCSI target object identifier.

SCSI_ID

Target SCSI ID.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe AddConnection
{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B} 0 {D326A5E2-6817-4AC7-94CF-
DE90CA5179A3} 0
```

Command adds new connection between bus 0 of Virtual Storage Controller interface and **Target 0** target object with SCSI ID 0.

2.2. AddLun

AddLun command adds new logical unit to virtual hardware configuration.

Command format:

```
VsdeCli.exe AddLun [-n name] [-N number] [-p product_identification]

    [-r revision_level] [-s serial_number]

    [-t {Direct|Sequential|Processor|Multimedia|Optical|Changer}]

    [-v vendor_identification] [-V version] target
```

Command options:

-n name

Friendly logical unit name string. It can include up to 255 characters. If option is omitted the "Logical Unit" name string will be used.

-N number

Logical unit number. Valid values are from 0 to 255. If option is omitted zero value (LUN0) will be used.

-p product_identification

Product identification string. It can include up to 16 characters. If option is omitted the type dependent string will be used. If direct access device type is selected the "DIRECT" string will be used. If sequential access device type is selected the "SEQUENTIAL" string will be used. If processor device type is selected the "PROCESSOR" string will be used. If multi-media device type is selected the "MULTIMEDIA" string will be used. If optical memory device type is selected the "OPTICAL" string will be used. If media changer device type is selected the "CHANGER" string will be used.

-r revision_level

Product revision level string. It can include up to 4 characters. If option is omitted the "0001" string will be used.

-R

Specifies removable medium flag. If option is present the logical unit will have removable medium. If option is omitted the logical unit will have fixed medium. This option is interpreted only for direct access device. Devices of the other types always have removable medium.

-s serial_number

Unit serial number string. It can include up to 32 characters. If option is omitted the "000000000" string will be used.

-t {Direct|Sequential|Processor|Multimedia|Optical|Changer}

Device type string. Option value is case insensitive. If option is omitted the direct access device type will be selected.

-v vendor_identification

Vendor identification string. It can include up to 8 characters. If option is omitted the "CHOBIK" string will be used.

-V version

Device version number. This value is reported in VERSION field in standard inquiry data. If option is omitted the value 3 will be used.

Command parameters:

target

SCSI target object identifier. The created logical unit object will be assigned to this SCSI target object.

Command sample:

```
C:\Program   Files\Virtual   Storage   Device   Emulator>VsdeCli.exe   AddLun
{D326A5E2-6817-4AC7-94CF-DE90CA5179A3}

Identifier: {215860FF-8F42-4A2A-BD51-A498DB8B80AD}

Target: {D326A5E2-6817-4AC7-94CF-DE90CA5179A3}

Name: Logical Unit

Number: 0

Type: Direct

Version: 3

Vendor: CHOBIK

Product: DIRECT

Revision: 0001

Serial: 000000000

Removable medium: 0
```

Command adds direct access device with default parameters and assigns it to **Target 0**.

2.3. AddMedium

AddMedium command adds new virtual medium to virtual hardware configuration.

Command format:

```
VsdeCli.exe AddMedium [-c capacity] [-d tape_density]
     [-m manufacturer] [-M mode_medium_type]
```

```
    [-s serial_number] [-S mam_size]
    [-t {Disk|Tape|CD/DVD/BD|Optical}]
    [-v volume_tag] data_folder
```

Common options:

-c capacity

Medium capacity in MiB units. If option is omitted the 1024 MiB capacity will be selected.

-m manufacturer

Medium manufacturer string. It can include up to 8 characters. If option is omitted the medium manufacturer will be empty.

-M mode_medium_type

Numerical medium type value that is reported in mode parameter header. Valid values are from 0 to 0xFF (255). If option is omitted zero value will be used.

-s serial_number

Medium serial number string. It can include up to 32 characters. If option is omitted the medium serial number will be empty.

-S mam_size

Medium auxiliary memory (MAM) size in 4 KiB units. Valid values are from 0 to 0xFF (255). If option is omitted zero MAM size will be selected.

-t {Disk|Tape|CD/DVD/BD|Optical}

General medium type. Option value is case insensitive. If option is omitted the disk medium type will be selected.

-v volume_tag

Volume tag string. It can include up to 32 characters. If option is omitted the medium volume tag will be empty.

Tape specific options:

-d tape_density

Tape density code. Valid values are from 0 to 0xFF (255). If option is omitted zero value will be selected for tape density.

Command parameters:

data_folder

Full path to the folder where medium storage file(s) will be located.

Command sample:

```
C:\Program  Files\Virtual  Storage  Device  Emulator>VsdeCli.exe  AddMedium
"C:\ProgramData\Virtual Storage Device Emulator"
Identifier: 17
```

Command adds new virtual disk medium with default parameters.

2.4. AddTarget

AddTarget command adds new SCSI target to virtual hardware configuration.

Command format:

```
VsdeCli.exe AddTarget [-i {SCSI_ID|Auto}] [-n name]
```

Command options:

-i {SCSI_ID|Auto}

Numerical SCSI target SCSI ID value in decimal or hexadecimal form. Valid values are from 0 to 0xFE (254). If Auto value is used the SCSI ID will be selected automatically. If option is omitted the Auto value will be used.

-n name

Friendly SCSI target name. It can include up to 255 characters. If option is omitted the "Target" name will be used.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe AddTarget
Identifier: {0AEB5717-8092-4297-9992-4F9F49640557}
Name: Target
SCSI identifier: Auto
```

Command adds new SCSI target with default parameters.

2.5. DeleteMedium

DeleteMedium command deletes the virtual medium from virtual hardware configuration and removes medium data files from local file system. After deletion of virtual medium the medium data will be lost permanently.

Command format:

```
VsdeCli.exe DeleteMedium medium_identifier
```

Command parameters:

medium_identifier

Numerical identifier of the medium to delete.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe DeleteMedium 17
```

Command removes existing virtual medium with identifier 17.

2.6. EnableInterface

EnableInterface command enables or disables interface object.

Command format:

```
VsdeCli.exe EnableInterface [-d] interface
```

Command options:

-d

> Disables interface. If option is omitted the interface is enabled.

Command parameters:

interface

> Interface object identifier.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe EnableInterface
{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}
```

Command enables virtual storage controller interface.

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe EnableInterface
/d {6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}
```

Command disables virtual storage controller interface.

2.7. EnumBuses

EnumBuses command enumerates all available buses for interface.

Command format:

```
VsdeCli.exe EnumBuses [-v] interface
```

Command options:

-v

> Produces verbose output. In verbose mode the list header is printed on top of the list.

Command parameters:

interface

Interface object identifier.

The command output is the list of items. Each item corresponds to interface bus and includes the following fields:

- Numerical bus identifier.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe EnumBuses
{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}
0
1
2
3
4
5
6
7
```

Command enumerates buses for virtual storage controller interface.

2.8. EnumChangerDrives

EnumChangerDrives command enumerates data transfer elements and mapped drives for media changer device.

Command format:

```
VsdeCli.exe EnumChangerDrives [-v] logical_unit
```

Command options:

-v

Produces verbose output. In verbose mode the list header is printed on top of the list.

Command parameters:

logical_unit

Logical unit object identifier for media changer device.

The command output is the list of items. Each item corresponds to data transfer element and includes the following fields:

- Element address.

- Identifier of drive logical unit that is mapped to data transfer element. If no drive logical unit is mapped the item field is empty.

Command sample:

```
C:\Program    Files\Virtual    Storage    Device    Emulator>VsdeCli.exe
EnumChangerDrives {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}
```

```
256     {50DE2168-0DBF-498A-BE85-1F95E6690599}
```

```
257     {912B1489-107E-4CFD-96B0-64E3AE8025D5}
```

Command enumerates data transfer elements for **Virtual Tape Library** media changer.

2.9. EnumConnections

EnumConnections command enumerates either all configured connections or connections configured for specified interface bus/SCSI target.

Command format:

```
VsdeCli.exe EnumConnections [-b|-t] [-v] [interface bus|target]
```

Command options:

-b

>   Enumerate active connections for interface bus.

-t

>   Enumerate active connections for SCSI target.

-v

>   Produces verbose output. In verbose mode the list header is printed on top of the list.

Command parameters:

interface

>   Interface object identifier.

bus

>   Interface bus identifier.

target

>   SCSI target object identifier.

The command output is the list of items. Each item corresponds to data transfer element and includes the following fields:

- Interface object identifier.

- Interface bus identifier.

- SCSI target object identifier.

- Target SCSI ID.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe EnumConnections

{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}   3            {A0A2228E-9882-4E3E-8351-
23D1A3CDE5D8}   3

{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}   4            {C1782976-7AF4-401C-9FC5-
25949F3F12DE}   4

{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}   5            {09BFD932-52C8-418D-BB00-
6380A3C3C2A7}   0

{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}   0            {D326A5E2-6817-4AC7-94CF-
DE90CA5179A3}   0
```

Command enumerates all configured connections.

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe EnumConnections
/t {D326A5E2-6817-4AC7-94CF-DE90CA5179A3}

{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}   0            {D326A5E2-6817-4AC7-94CF-
DE90CA5179A3}   0
```

Command enumerates active connections for **Target 0** SCSI target object.

2.10. EnumInterfaces

EnumInterfaces command enumerates all available interfaces and prints the interface information.

Command format:

```
VsdeCli.exe EnumInterfaces [-v]
```

Command options:

-v

    Produces verbose output. In verbose mode the list header is printed on top of the list.

The command output is the list of items. Each item corresponds to interface object and includes the following fields:

- Interface object identifier is GUID value in text representation.

- Interface name string is the friendly name that is shown in management console GUI.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe EnumInterfaces
{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}   Chobik Virtual Storage Controller
{8FC25E0A-B063-4E4B-AF9D-CDE5FF2B3922}   Ethernet 4
{15A9A287-071D-46A6-AF0A-98DEEEA91DDA}   Local host network interface
```

Command enumerates all available interfaces.

2.11. EnumLuns

EnumLuns command enumerates either all configured logical units or logical units assigned to specified SCSI target. Command then prints the logical unit information as a list of values.

Command format:

```
VsdeCli.exe EnumLuns [-v] [target]
```

Command options:

-v

Produces verbose output. In verbose mode the list header is printed on top of the list.

Command parameters:

target

SCSI target object identifier. If target object identifier is not specified the command enumerates all configured logical units. If target object identifier is specified the command enumerates logical units that are assigned to specified target.

The command output is the list of items. Each item corresponds to logical unit object and includes the following fields:

- Logical unit object identifier is GUID value in text representation. All logical units have unique identifiers that are persistent over the system reboots.

- Logical unit name string is the friendly name that is shown in management console GUI. Logical unit name is specified during creation of new logical unit.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe EnumLuns
{5182513C-DFB0-4D92-8763-015456DE69F7}  Virtual Tape Drive
{2E551E8C-F1A3-4144-BE77-F3A44F3CAC8B}  Virtual Disk
{E869389D-0506-462A-86D0-2AAA0495E27A}  Virtual Media Changer
```
Command enumerates all logical units.

```
C:\Program   Files\Virtual   Storage   Device   Emulator>VsdeCli.exe   EnumLuns
{D326A5E2-6817-4AC7-94CF-DE90CA5179A3}
{5182513C-DFB0-4D92-8763-015456DE69F7}  Virtual Tape Drive
```
Command enumerates logical units for **Target 0** SCSI target object.

2.12. EnumMedia

EnumMedia command enumerates configured virtual media.

Command format:

```
VsdeCli.exe EnumMedia [-v]
```

Command options:

-v

 Produces verbose output. In verbose mode the list header is printed on top of the list.

The command output is the list of items. Each item corresponds to virtual medium and includes the following fields:

- Medium identifier.

- General medium type.

- Medium capacity in MiB units.

- Medium volume tag.

- Media changer element address. If medium is not inserted to any device or is inserted to drive (non-changer) device this field is empty.

- Logical unit object identifier of the device the medium is currently inserted in. If medium is not inserted into any device the item field is empty.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe EnumMedia
9                          1          4096                    230001L7
4096    {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}
10                         1          4096                    230002L7
{50DE2168-0DBF-498A-BE85-1F95E6690599}
11                         1          4096                    230003L7
4098    {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}
12                         1          4096                    230004L7
4099    {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}
13                         1          4096                    230005L7
4100    {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}
14                         1          4096                    230006L7
4101    {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}
15                         1          4096                    230007L7
4102    {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}
16                         1          4096                    230008L7
4103    {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}
```

Command enumerates all configured virtual media. Media 9, 11, 12, 13, 14, 15, and 16 are inserted into media changer device. Medium 10 is inserted into sequential access device.

2.13. EnumTargets

EnumTargets command enumerates all configured SCSI targets and prints the target information.

Command format:

```
VsdeCli.exe EnumTargets [-v]
```

Command options:

-v

Produces verbose output. In verbose mode the list header is printed on top of the list.

The command output is the list of items. Each item corresponds to SCSI target object and includes the following fields:

- SCSI target object identifier is GUID value in text representation.

- SCSI target name string is the friendly name that is shown in management console GUI. SCSI target name is specified during creation of new SCSI target.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe EnumTargets
{D326A5E2-6817-4AC7-94CF-DE90CA5179A3}  Target 0
{6EAF05B0-1677-42F9-9CF0-70EBE3126AE2}  Target 1
{62998DD5-75B6-4057-A94A-F2FFA56A20F3}  Target 2
```
Command enumerates all configured SCSI target objects.

2.14. GetDeviceParameters

GetDeviceParameters command gets device type specific parameters.

Command format:

```
VsdeCli.exe GetDeviceParameters logical_unit
```

Command parameters:

logical_unit

Logical unit object identifier for media changer device.

The command output is the list of values. Each value corresponds to device parameter. The set of parameters depends on device type.

The following interface properties are supported for direct access and optical memory devices:

- **Block length** is logical block length in bytes.

- **Head count** is number of heads.

- **Sectors per track** in the number of physical sectors on single track.

- **Rotation rate** is spindle rotation rate in RPM.

- **Capacity** is disk capacity in MiB units. This parameter is supported only for fixed medium.

- **Data file** is full path to storage data file. This parameter is supported only for fixed medium.

The following interface properties are supported for sequential access devices:

- **Block length granularity** is the value reported in GRANULARITY field in read block limits data.

- **Maximum block length** is maximum supported block length in bytes.

- **Minimum block length** is minimum supported block length in bytes.

- **Maximum logical object identifier** is maximum supported value of logical object identifier.

The following interface properties are supported for media changer devices:

- **Medium type** is general medium type supported by the library.

- **Medium transport address** is the address of first medium transport element.

- **Medium transport count** is the total number of medium transport elements.

- **Storage address** is the address of first storage element.

- **Storage count** is the total number of storage elements.

- **Import/export address** is the address of first import/export element.

- **Import/export count** is the total number of import/export elements.

- **Data transfer address** is the address of first data transfer element.

- **Data transfer count** is the total number of data transfer elements.

Command sample:

```
C:\Program    Files\Virtual    Storage    Device    Emulator>VsdeCli.exe
GetDeviceParameters {2E551E8C-F1A3-4144-BE77-F3A44F3CAC8B}

Identifier: {2E551E8C-F1A3-4144-BE77-F3A44F3CAC8B}

Block length: 512

Head count: 255

Sectors per track: 63

Rotation rate: 7200

Capacity: 1024

Data file: D:\Disk1.vsde
```

Command gets parameters of virtual direct access device.

```
C:\Program      Files\Virtual      Storage      Device      Emulator>VsdeCli.exe
GetDeviceParameters {50DE2168-0DBF-498A-BE85-1F95E6690599}

Identifier: {50DE2168-0DBF-498A-BE85-1F95E6690599}

Block length granularity: 0

Maximum block length: 1048576

Minimum block length: 1

Maximum logical object identifier: 281474976710655
```
Command gets parameters of virtual sequential access device.

```
C:\Program      Files\Virtual      Storage      Device      Emulator>VsdeCli.exe
GetDeviceParameters {E869389D-0506-462A-86D0-2AAA0495E27A}

Identifier: {E869389D-0506-462A-86D0-2AAA0495E27A}

Medium type: Tape

Medium transport address: 1

Medium transport count: 1

Storage address: 4096

Storage count: 16

Import/export address: 16

Import/export count: 1

Data transfer address: 256

Data transfer count: 2
```
Command gets parameters of virtual media changer device.

2.15. GetElementStatus

GetElementStatus command gets and prints element status information for media changer device.

Command format:

```
VsdeCli.exe GetElementStatus [-a start_address] [-d]
[-e element_count] [-i] [-s] [-v] logical_unit
```
Command options:

-a start_address

Starting element address. If option is present only elements with address greater than or equal to starting element address will be printed. If option is omitted all elements will be printed.

-d

Get status information for data transfer elements.

-e element_count

Maximum number of elements to print. If option is omitted all elements will be printed.

-i

Get status information for import/export elements.

-s

Get status information for storage elements.

-v

Produces verbose output. In verbose mode the list header is printed on top of the list.

Command parameters:

logical_unit

Logical unit object identifier for media changer device.

If all –d, -i, and –s options are omitted the commands prints status information for all elements. The command output is the list of items. Each item corresponds to virtual medium and includes the following fields:

- Media changer element address.

- Medium identifier. If no medium is located in the element the field is empty.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe GetElementStatus
{FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}
16
17
18
19
256
257
4096    9
4097
4098    11
4099    12
4100    13
4101    14
4102    15
4103    16
4104
4105
4106
4107
4108
```

```
4109

4110

4111
```

Command prints status information for all elements.

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe GetElementStatus
-s -a 4096 -e 4 {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}

4096    9

4097

4098    11

4099    12
```

Command prints status information for first 4 storage elements.

2.16. GetInterfaceInfo

GetInterfaceInfo command returns information for specified interface and prints the list of interface properties.

Command format:

```
VsdeCli.exe GetInterfaceInfo interface
```

Command parameters:

interface

Interface object identifier.

The command output is the list of values. Each value corresponds to interface property. The following interface properties are supported:

- **Identifier** is interface object identifier.

- **Name** is the friendly interface name that is shown in management console GUI. Interface name is provided by the operating system and is not necessarily unique.

- **Maximum targets** is maximum supported number of SCSI targets.

- **Maximum luns** is maximum supported number of logical units per SCSI target.

- **Bus type** is numerical storage bus type. The following values are defined in Windows SDK/WDK:

Value	Description
0	Unknown
1	Small computer system interface (SCSI)

2	AT Attachment Packet Interface (ATAPI)
3	Advanced technology attachment (ATA)
4	IEEE 1394
5	Serial storage architecture (SSA)
6	Fibre channel
7	USB
8	Redundant array of independent disks (RAID)
9	iSCSI
10	Serial-attached SCSI (SAS)
11	Serial ATA
12	Secure digital
13	Multimedia card
14	Virtual
15	File-backed virtual
16	Spaces
17	NVM Express (NVMe)

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe GetInterfaceInfo
{8FC25E0A-B063-4E4B-AF9D-CDE5FF2B3922}

Identifier: {8FC25E0A-B063-4E4B-AF9D-CDE5FF2B3922}

Name: Ethernet 4

Maximum targets: 255

Maximum luns: 256

Bus type: 9
```

Command gets information for iSCSI network interface **Ethernet 4**.

2.17. GetInterfaceStatus

GetInterfaceStatus command returns status information for specified interface object.

Command format:

```
VsdeCli.exe GetInterfaceStatus interface
```

Command parameters:

interface

   Interface object identifier.

The command output is the list of values. Each list value corresponds to interface status value. The following interface status values are supported:

- **Identifier** is interface object identifier.

- **Enabled** is flag of enable interface object.

Command sample:

```
C:\Program     Files\Virtual     Storage     Device     Emulator>VsdeCli.exe
GetInterfaceStatus {8FC25E0A-B063-4E4B-AF9D-CDE5FF2B3922}

Identifier: {8FC25E0A-B063-4E4B-AF9D-CDE5FF2B3922}

Enabled: 0
```

Command gets status information for iSCSI network interface **Ethernet 4**.

2.18. GetLunInfo

GetLunInfo command returns information for specified logical unit and prints the list of logical unit properties.

Command format:

```
VsdeCli.exe GetLunInfo logical_unit
```

Command parameters:

logical_unit

   Logical unit object identifier.

The command output is the list of values. Each value corresponds to logical unit property. The following logical unit properties are supported:

- **Identifier** is logical unit object identifier.

- **Target** is identifier of parent SCSI target object.

- **Name** is the friendly logical unit object name that is shown in management console GUI. Logical unit name is specified during creation of new logical unit.

- **Number** is logical unit number (LUN).

- **Type** is SCSI device type value as specified in SCSI standard (SPC).

- **Version** is the numerical value that is reported in standard inquiry data in VERSION field.

- **Vendor** is vendor identification string that is reported in standard inquiry data.

- **Product** is product identification string that is reported in standard inquiry data.

- **Revision** is product revision level string that is reported in standard inquiry data.

- **Serial** is serial number string that is reported in Unit Serial Number VPD page.

- **Removable medium** is the flag of removable device medium.

Command sample:

```
C:\Program  Files\Virtual  Storage  Device  Emulator>VsdeCli.exe  GetLunInfo
{2E551E8C-F1A3-4144-BE77-F3A44F3CAC8B}

Identifier: {2E551E8C-F1A3-4144-BE77-F3A44F3CAC8B}

Target: {6EAF05B0-1677-42F9-9CF0-70EBE3126AE2}

Name: Virtual Disk

Number: 0

Type: 0

Version: 3

Vendor: CHOBIK

Product: DIRECT

Revision: 0001

Serial: 000000000

Removable medium: 0
```

Command gets information for virtual direct access device **Virtual Disk**.

2.19. GetTargetInfo

GetTargetInfo command returns information for specified SCSI target and prints the list of SCSI target properties.

Command format:

```
VsdeCli.exe GetTargetInfo target
```

Command parameters:

target

   SCSI target object identifier.

The command output is the list of values. Each value corresponds to SCSI target property. The following SCSI target properties are supported:

- **Identifier** is SCSI target object identifier.

- **Name** is the friendly SCSI target object name that is shown in management console GUI. SCSI target name is specified during creation of new SCSI target.

- **SCSI identifier** is assigned SCSI ID value under which the target is visible on storage bus to initiator. If SCSI identifier is **Auto** the optimal value is selected for each connection between SCSI target and interface bus. If SCSI identifier is numerical value this value is used as "preferred" when new connection between SCSI target and interface bus is established. If SCSI target is connected to multiple buses it can be visible under different SCSI ID values on different buses.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe GetTargetInfo
{D326A5E2-6817-4AC7-94CF-DE90CA5179A3}

Identifier: {D326A5E2-6817-4AC7-94CF-DE90CA5179A3}

Name: Target 0

SCSI identifier: Auto
```

Command gets information for SCSI target object **Target 0**.

2.20. InsertMediumDevice

InsertMediumDevice command inserts virtual medium to either media changer device or to drive device of corresponding type.

Command format:

```
VsdeCli.exe InsertMediumDevice [-a address] [-u] logical_unit medium
```

Command options:

-a address

Starting element address for media insertion. Valid values are from 0 to 0xFFFF (65535). Option is mandatory for media changer device. Option is ignored for non-changer devices.

-u

Update element status if medium is inserted to media changer device.

Command parameters:

logical_unit

Logical unit identifier to insert the medium to.

medium

Medium identifier to insert.

Command sample:

```
C:\Program      Files\Virtual      Storage      Device      Emulator>VsdeCli.exe
InsertMediumDevice -a 4097 -u {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D} 10
```

Command inserts virtual tape medium with identifier 10 to the media changer device to storage element with address 4097 and updates element status data.

```
C:\Program      Files\Virtual      Storage      Device      Emulator>VsdeCli.exe
InsertMediumDevice {50DE2168-0DBF-498A-BE85-1F95E6690599} 10
```

Command inserts virtual tape medium with identifier 10 to the virtual sequential access device.

2.21. RemoveConnection

RemoveConnection command removes virtual connection between interface bus and SCSI target from virtual hardware configuration.

Command format:

```
VsdeCli.exe RemoveConnection interface bus target SCSI_ID
```

Command parameters:

interface

>Interface object identifier.

bus

>Interface bus identifier.

target

>SCSI target object identifier.

SCSI_ID

>Target SCSI ID.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe RemoveConnection
{6AA9192B-8D89-4423-A1E3-7EC59ABCCF1B}      0      {D326A5E2-6817-4AC7-94CF-
DE90CA5179A3} 0
```

Command removes virtual connection between bus 0 of Virtual Storage Controller interface and SCSI target object **Target 0**.

2.22. RemoveLun

RemoveLun command removes logical unit object from virtual hardware configuration. If logical unit object corresponds to device with fixed medium the medium data file is deleted automatically.

Command format:

```
VsdeCli.exe RemoveLun lun
```

Command parameters:

lun

> Logical unit object identifier.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli RemoveLun {215860FF-
8F42-4A2A-BD51-A498DB8B80AD}
```

Command removes logical unit object.

2.23. RemoveMediumDevice

RemoveMediumDevice command removes virtual medium from media changer device or drive device.

Command format:

```
VsdeCli.exe RemoveMediumDevice [-u] medium
```

Command options:

-u

> Update element status if medium is removed from media changer device. For other device types this option is ignored.

Command parameters:

medium

> Medium identifier to remove from device.

Command sample:

```
C:\Program      Files\Virtual      Storage      Device      Emulator>VsdeCli.exe
RemoveMediumDevice -u 10
```

Command removes medium with identifier 10 from media changer device and updates element status data.

2.24. RemoveTarget

RemoveTarget command removes SCSI target object from virtual hardware configuration. If virtual connections are configured for the SCSI target object they will be removed from virtual hardware configuration automatically. If logical units are assigned to SCSI target object they will be removed from virtual hardware configuration automatically.

Command format:

```
VsdeCli.exe RemoveTarget target
```

Command parameters:

target

   Target object identifier to remove.

Command sample:

```
C:\Program  Files\Virtual  Storage  Device  Emulator>VsdeCli.exe  RemoveTarget
{0AEB5717-8092-4297-9992-4F9F49640557}
```

Command removes SCSI target object.

2.25. SetChangerDrive

SetChangerDrive command sets parameters of data transfer element in media changer device.

Command format:

```
VsdeCli.exe       SetChangerDrive       [-m       drive_logical_unit|-u]
changer_logical_unit element_address
```

Command options:

-m drive_logical_unit

   Maps data transfer element to drive logical unit. drive_logical_unit is logical unit object identifier for drive device. This option is mutually exclusive with option –u.

-u

   Unmaps data transfer element from drive logical unit. This option is mutually exclusive with option -m.

Command parameters:

changer_logical_unit

   Logical unit object identifier for media changer device.

element_address

>   Data transfer element address.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe SetChangerDrive
-m      {50DE2168-0DBF-498A-BE85-1F95E6690599}      {FFC4E730-0F5C-4DE8-B5E8-
18FCE5073F3D} 256
```

Command maps data transfer element 256 to **Virtual Tape Drive 1** logical unit.

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe SetChangerDrive
-u {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D} 256
```

Command removes mapping of data transfer element 256 to the drive logical unit.

2.26. SetChangerParameters

SetChangerParameters command sets parameters for media changer device.

Command format:

```
VsdeCli.exe SetChangerParameters [-da data_transfer_address]

[-dc data_transfer_count] [-ia import_export_address]

[-ic import_export_count] [-ma medium_transport_address]

[-mc medium_transport_count] [-sa storage_address]

[-sc storage_count] [-t {Disk|Tape|CD/DVD/BD|Optical}] logical_unit
```

Command options:

-da data_transfer_address

>   Address of first data transfer element. Valid values are from 0 to 0xFFFF (65535).

-dc data_transfer_count

>   Total number of data transfer elements. Valid values are from 0 to 0x100 (256).

-ia import_export_address

>   Address of first import/export element. Valid values are from 0 to 0xFFFF (65535).

-ic import_export_count

>   Total number of import/export elements. Valid values are from 0 to 0x80 (128).

-ma medium_transport_address

>   Address of first medium transport element. Valid values are from 0 to 0xFFFF (65535).

-mc medium_transport_count

Total number of medium transport elements. Valid values are from 0 to 0xF (15).

-sa storage_address

Address of first storage element. Valid values are from 0 to 0xFFFF (65535).

-sc storage_count

Total number of storage elements. Valid values are from 0 to 0xF000 (61440).

-t {Disk|Tape|CD/DVD/BD|Optical}

General medium type. Option value is case insensitive.

Command parameters:

logical_unit

Media changer logical unit object identifier to set parameters for.

After successful setting of device parameters the command prints the current values of device parameters. If certain option is omitted the corresponding device parameter will not be changed. If all options are omitted the command simply prints the current values of device parameters.

Command sample:

```
C:\Program     Files\Virtual     Storage     Device     Emulator>VsdeCli.exe
SetChangerParameters -t Tape -dc 2 -ic 4 -sc 16 {FFC4E730-0F5C-4DE8-B5E8-
18FCE5073F3D}

Identifier: {FFC4E730-0F5C-4DE8-B5E8-18FCE5073F3D}

Medium type: Tape

Medium transport address: 1

Medium transport count: 1

Storage address: 4096

Storage count: 16

Import/export address: 16

Import/export count: 4

Data transfer address: 256

Data transfer count: 2
```

Command sets general medium type to **Tape**, number of data transfer elements to 2, number of import/export elements to 4, number of storage elements to 16, and leaves other media changer device parameters unchanged.

2.27. SetDirectParameters

SetDirectParameters command sets parameters for direct access and optical memory devices.

Command format:

```
VsdeCli.exe SetDirectParameters [-b block_length]
```

```
[-c capacity] [-d data_file] [-h head_count] [-r rotation_rate]

[-s sectors_per_track] logical_unit
```

Command options:

block_length

Block length in bytes. Valid values are: 512, 1024, 2048, 4096, 8192, 16384, 32768.

-c capacity

Fixed disk medium capacity in MiB units. Option is applicable only for fixed medium.

-d data_file

Full path to disk data file for fixed medium. Maximum path length is 1023 characters. Option is applicable only for fixed medium.

-h head_count

Number of heads. Valid values are from 0 to 0xFF (255).

-r rotation_rate

Medium rotation rate in RPM. Valid values are from 0 to 0xFFFF (65535).

-s sectors_per_track

Number of sectors per track. Valid values are from 0 to 0xFF (255).

Command parameters:

logical_unit

Direct access device logical unit object identifier to set parameters for.

After successful setting of device parameters the command prints the current values of device parameters. If certain option is omitted the corresponding device parameter will not be changed. If all options are omitted the command simply prints the current values of device parameters.

Command sample:

```
C:\Program    Files\Virtual    Storage    Device    Emulator>VsdeCli.exe
SetDirectParameters -b 512 -c 2048 {2E551E8C-F1A3-4144-BE77-F3A44F3CAC8B}

Identifier: {2E551E8C-F1A3-4144-BE77-F3A44F3CAC8B}

Block length: 512

Head count: 255

Sectors per track: 63

Rotation rate: 7200

Capacity: 2048

Data file: D:\Disk1.vsde
```

Command sets logical block length to 512 bytes, disk capacity to 2048 MiB, and leaves other direct access device parameters unchanged.

2.28. SetLunInfo

SetLunInfo command sets basic information for logical unit object.

Command format:

```
VsdeCli.exe SetLunInfo [-n name] [-N number]

[-p product_identification] [-r revision_level]

[-s serial_number] [-v vendor_identification]

[-V version] logical_unit
```

Command options:

-n name

Friendly logical unit name. It can include up to 255 characters.

-N number

Logical unit number. Valid values are from 0 to 255.

-p product_identification

Product identification string. It can include up to 16 characters. This value is reported in PRODUCT IDENTIFICATION field in standard inquiry data.

-r revision_level

Product revision level string. It can include up to 4 characters. This value is reported in PRODUCT REVISION LEVEL field in standard inquiry data.

-s serial_number

Serial number string. It can include up to 32 characters.

-v vendor_identification

Vendor identification string. It can include up to 8 characters. This value is reported in T10 VENDOR IDENTIFICATION field in standard inquiry data.

-V version

Version number. This value is reported in VERSION field in standard inquiry data.

Command parameters:

logical_unit

Logical unit object identifier.

After successful setting of logical unit parameters the command prints the current values of logical unit parameters. If certain option is omitted the corresponding logical unit parameter will not be changed. If all options are omitted the command simply prints the current values of logical unit parameters.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe SetLunInfo -v
VENDORID -p DIRECTPRODUCT -s 123456789 {2E551E8C-F1A3-4144-BE77-F3A44F3CAC8B}

Identifier: {2E551E8C-F1A3-4144-BE77-F3A44F3CAC8B}

Target: {6EAF05B0-1677-42F9-9CF0-70EBE3126AE2}

Name: Virtual Disk

Number: 0

Type: Direct

Version: 3

Vendor: VENDORID

Product: DIRECTPRODUCT

Revision: 0001

Serial: 123456789

Removable medium: 0
```

Command sets vendor identification string to **VENDORID**, product identification string to **DIRECTPRODUCT**, serial number string to **123456789**, and leaves other logical unit parameters unchanged.

2.29. SetSequentialParameters

SetSequentialParameters command sets parameters for sequential access device.

Command format:

```
VsdeCli.exe SetSequentialParameters [-g granularity]

[-m maximum_block_length] [-n minimum_block_length]

[-o maximum_logical_object] logical_unit
```

Command options:

-g granularity

Block length granularity. Valid values are from 0 to 0x1F (31).

-m maximum_block_length

Maximum block length in bytes. Valid values are from 0 to 0xFFFFFF (16777215).

-n minimum_block_length

Minimum block length in bytes. Valid values are from 0 to 0xFFFF (65535).

-o maximum_logical_object

Maximum supported value for logical object identifier. Valid values are unsigned 8-byte integer values from 0 to 0xFFFFFFFFFFFFFFFF.

Command parameters:

logical_unit

Logical unit object identifier for sequential access device.

After successful setting of device parameters the command prints the current values of device parameters. If certain option is omitted the corresponding device parameter will not be changed. If all options are omitted the command simply prints the current values of device parameters.

Command sample:

```
C:\Program      Files\Virtual      Storage      Device      Emulator>VsdeCli.exe
SetSequentialParameters   -m   2097152   -n   256   {50DE2168-0DBF-498A-BE85-
1F95E6690599}
Identifier: {50DE2168-0DBF-498A-BE85-1F95E6690599}
Block length granularity: 0
Maximum block length: 2097152
Minimum block length: 256
Maximum logical object identifier: 281474976710655
```

Command sets maximum block length to 2 MiB, minimum block length to 256 bytes, and leaves other sequential device parameters unchanged.

2.30. SetTargetInfo

SetTargetInfo command sets information for SCSI target object.

Command format:

```
VsdeCli.exe SetTargetInfo [-i {SCSI_ID|Auto}] [-n name] target
```

Command options:

-i {SCSI_ID|Auto}

Numerical SCSI target SCSI ID value in decimal or hexadecimal form. Valid values are from 0 to 0xFE (254). If Auto value is used the SCSI ID will be selected automatically.

-n name

Friendly SCSI target name. It can include up to 255 characters.

Command parameters:

target

SCSI target object identifier to set information for.

After successful setting of SCSI target parameters the command prints the current values of SCSI target parameters. If certain option is omitted the corresponding SCSI target parameter will not be changed. If all options are omitted the command simply prints the current values of SCSI target parameters.

Command sample:

```
C:\Program Files\Virtual Storage Device Emulator>VsdeCli.exe SetTargetInfo -i
1 -n "Sample SCSI Target" {D326A5E2-6817-4AC7-94CF-DE90CA5179A3}
Identifier: {D326A5E2-6817-4AC7-94CF-DE90CA5179A3}
Name: Sample SCSI Target
SCSI identifier: 1
```

Command sets SCSI ID to 1 and SCSI target name string to **Sample SCSI Target**.

2.31. TapeDensitySupport

TapeDensitySupport command manages the list of supported tape densities for virtual sequential access device.

Command format:

```
VsdeCli.exe TapeDensitySupport [-a|-r] [-b bits_per_mm]

[-c capacity] [-d duplicate] [-D description]

[-f default] [-m media_width] [-n density_name]

[-o assigning_organization] [-p primary_density]

[-s secondary_density] [-t tracks] [-v] [-w write] logical_unit
```

Command options:

-a

Adds new tape density descriptor to the end of the list. This option is mutually exclusive with option -r.

-b bits_per_mm

Specifies value of BITS PER MM field in density support descriptor. Valid values are from 0 to 0xFFFFFF (16777215).

-c capacity

Specifies value of CAPACITY field in density support descriptor. Valid values are from 0 to 0xFFFFFFFF (4294967295).

-d duplicate

Specifies value of DUP field in density support descriptor. Valid values are 0 or 1.

-D description

Specifies value of DESCRIPTION field in density support descriptor. Maximum length of description string is 20 characters.

-f default

Specifies value of DEFLT field in density support descriptor. Valid values are 0 or 1.

-m media_width

Specifies value of MEDIA WIDTH field in density support descriptor. Valid values are from 0 to 0xFFFF (65535).

-n density_name

Specifies value of DENSITY NAME field in density support descriptor. Maximum length of density name string is 8 characters.

-o assigning_organization

Specifies value of ASSIGNING ORGANIZATION field in density support descriptor. Maximum length of organization name string is 8 characters.

-p primary_density

Specifies value of PRIMARY DENSITY CODE field in density support descriptor. Valid values are from 0 to 0xFF (255).

-r

Removes all tape density descriptors from the list. This option is mutually exclusive with option -a.

-s secondary_density

Specifies value of SECONDARY DENSITY CODE field in density support descriptor. Valid values are from 0 to 0xFF (255).

-t tracks

Specifies value of TRACKS field in density support descriptor. Valid values are from 0 to 0xFFFF (65535).

-w write

Specifies value of WRTOK field in density support descriptor. Valid values are 0 and 1.

-v

Produces verbose output. In verbose mode the list header is printed on top of the list of supported tape densities.

Command parameters:

logical_unit

Logical unit object identifier to get supported tape densities for.

If neither of –a or –r options are specified the current list of supported tape densities is printed. The list of supported tape densities is the list of items. Each item corresponds to supported tape density and includes the following fields:

- Primary density code

- Secondary density code

- Write to media ok (WRTOK)

- Duplicated (DUP)

- Default (DEFLT)

- Bits per mm

- Media width

- Tracks

- Capacity

- Assigning organization

- Density name

- Description

Command sample:

```
C:\Program     Files\Virtual     Storage     Device     Emulator>VsdeCli.exe
TapeDensitySupport -r {50DE2168-0DBF-498A-BE85-1F95E6690599}
```

Command removes all supported density descriptors for sequential access device.

```
C:\Program     Files\Virtual     Storage     Device     Emulator>VsdeCli.exe
TapeDensitySupport -a -p 0x01 -s 0x81 -n DEN0 -o ORG0 -D DESC0 -f 1 -w 1
{50DE2168-0DBF-498A-BE85-1F95E6690599}
```

Command adds new supported tape density descriptor with: primary density code 0x01, secondary density code 0x81, density name DEN0, assigning organization name ORG0, description string DESC0, default flag 1, writable flag 1, and default values for other density tape parameters.

```
C:\Program     Files\Virtual     Storage     Device     Emulator>VsdeCli.exe
TapeDensitySupport {50DE2168-0DBF-498A-BE85-1F95E6690599}

1       129     1       0       1       0               0       0       0
ORG0            DEN0            DESC0
```

Command prints current list of supported tape density descriptors.