



# Lenovo ToolsCenter Suite CLI User's Guide for ThinkServer



Version 1.4.0

**Note**

Before using this information and the product it supports, read the information in Appendix B “Notices” on page 19.

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## About this publication

Lenovo ToolsCenter Suite CLI is a command line interface program that facilitates server management functions, such as firmware configuration, system inventory, firmware and device driver updates, and other functions. This guide provides information about how to download and use ToolsCenter Suite CLI.

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## Who should read this guide

This guide is for system administrators or other individuals responsible for system administration who are familiar with firmware and device driver maintenance.

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## Conventions and terminology

Paragraphs that start with a Note, Important, or Attention in bold have specific meanings to highlight key information:

**Note:** These notices provide important tips, guidance, or advice.

**Important:** These notices provide information or advice that might help you avoid inconvenient or difficult situations.

**Attention:** These notices indicate possible damage to programs, devices, or data. An attention notice appears before the instruction or situation in which damage can occur.

The following table provides a description of commonly used terms in the *Lenovo ToolsCenter Suite CLI Users Guide*.

Table 1. Commonly used terms

Term	Definition
BIOS	Basic Input Output System The code that controls basic hardware operations, such as interactions with diskette drives, hard disk drives, and the keyboard.
CDM	Common Diagnostic Model Standard diagnostics subprofile of the CIM specification.
CIM	Common Information Model Standard developed by the Distributed Management Task Force for enterprise level modeling of computer systems.
CIM Object Manager (or CIM broker)	High level service in the operating system that manages the creation and life cycle of managed object data. The format of managed data conforms to the CIM specification.
CIM Provider	Platform specific management software that interfaces between a CIM object manager and any lower level platform interfaces.
CLI	Command Line Interface A type of computer interface in which the input command is a string of text characters.

Table 1. Commonly used terms (continued)

Term	Definition
CMPI	Common Management Programming Interface Programming API designed to bridge the differences between multiple CIMOM implementations and CIM provider APIs.
CMR	Conversion Management Routine
CNA	Converged Network Adapter An I/O device that combines the functionality of a host bus adapter (HBA) with that of a network interface controller (NIC).
DIMM	Dual Inline Memory Module A double SIMM (single inline memory module). Contains one or more random access memory (RAM) chips.
DSA	Dynamic System Analysis Strategic problem determination tool for data collection, fault detection and remediation.
Firefox	Open source browser from Mozilla.
Fix-ID	Unique identifier for updates.
FoD	Features on Demand A Windows Server 2012 feature that allows the install files for features to be removed from the operating system. This reduces the size of the operating system.
FTP	File Transfer Protocol A standard network protocol that is used for transferring files from one host to another over a TCP-based network.
GUI	Graphical User Interface A type of computer interface that presents a visual metaphor of a real-world scene, often of a desktop, by combining high-resolution graphics, pointing devices, menu bars and other menus, overlapping windows, icons and the object-action relationship.
HBA	Host Bus Adapter An integrated circuit adapter or circuit board that provides I/O processing and physical connectivity between a host system and storage devices or a network.
HTTP	Hypertext Transfer Protocol The set of rules utilized on the World Wide Web to transfer various types of files. Types of files can include graphics, audio, video, text, and multimedia.
IMM	Integrated Management Module Firmware that consolidates the service processor functionality, Super I/O, video controller, and remote presence capabilities in a single chip on the server system board. The IMM replaces the baseboard management controller (BMC) and Remote Supervisor Adapter II in IBM System x servers.
IOM	ISDN-oriented Modular Interface A system architecture and its bus used for communication between VLSI ICs for the lower layers of ISDN.



Table 1. Commonly used terms (continued)

Term	Definition
IPMI	Intelligent Platform Management Interface Industry standard interface for communications between management applications and baseboard management controllers.
IPMI SEL	Intelligent Platform Management Interface System Event Log Used to view System Event Log (SEL) entries.
iSCSI	Internet Small Computer System Interface An internet protocol based storage networking standard for linking data storage devices and transferring data.
KCS	Keyboard Controller Style Keyboard An interface that is used between a Baseboard Management Controller and payload processor in Intelligent Platform Management Interface architecture.
KMS	Key Management System A method for activating physical computers or virtual machines on a local network.
LED	Light Emitting Diode A two-lead semiconductor device that produces visible light when electric current passes through it.
LightPath	The light emitting diode (LED) indicators on each resource in your system provide status about informational and error events, location, and resource faults as well as other immediately required information.
MAC	Media Access Control sublayer of the data link layer (DLL) in the seven-layer Open Systems Interconnection (OSI) network reference model. It enables multiple terminals or network nodes to communicate within a multiple access network that incorporates a shared medium.
OOB	Out-of-Band Pertaining to user-specific data that has meaning only for connection-oriented (stream) sockets. The server generally receives stream data in the same order that it was sent. OOB data is received independent of its position in the stream (independent of the order in which it was sent).
PCIE	Peripheral Component Interconnect Express A high-speed serial expansion bus standard for connecting a computer to peripheral devices.
PXE	Preboot Execution Environment An industry standard target/server interface that allows networked computers that are not yet loaded with an operating system to be configured and booted remotely. PXE is based on Dynamic Host Configuration Protocol (DHCP).
RAS	Reliability, Availability, Serviceability IBM standard requirements for system design and operation.

Table 1. Commonly used terms (continued)

Term	Definition
SFTP	Simple File Transfer Protocol A file transfer protocol with a level of complexity between TFTP and FTP.
SOL	Serial Over LAN Protocol for enabling serial communication over TCP/IP using standard IPMI commands.
TCS	ToolsCenter Suite
UEFI	Unified Extensible Firmware Interface Replaces BIOS as the interface between the operating system and platform firmware.
UTF8	8-bit Unicode Transformation Format A variable-length character encoding that can encode all possible characters in Unicode, using 8-bit code units.
VPD	Vital Product Data Configuration and informational data that is associated with a particular set of hardware or software and allows for administration from the system or network level, such as, but not limited to serial number and FRU.
WoL	Wake on LAN A technology that allows a computer to be powered on or awakened from sleep mode using a network message.

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## Publications and related information

To view a PDF file, you need Adobe Acrobat Reader, which can be downloaded for free from the <http://www.adobe.com/products/acrobat/readstep.html> website at [www.adobe.com/products/acrobat/readstep.html](http://www.adobe.com/products/acrobat/readstep.html).

### Publications

The latest version of the *Lenovo ToolsCenter Suite CLI Users Guide for ThinServer* can be downloaded from [ToolsCenter Suite CLI website](#).

This publication provides information about how to download and use Lenovo ToolsCenter Suite CLI to collect system information, configure firmware settings, and update firmware.

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## Web resources

The following websites and information center topics are resources for using ToolsCenter Suite CLI.

### Websites

- [ToolsCenter Suite CLI website](http://support.lenovo.com/us/en/documents/lnvo-tcli)  
<http://support.lenovo.com/us/en/documents/lnvo-tcli>  
Use this website to download the Lenovo ToolsCenter Suite CLI tool and documentation.
- [Lenovo ToolsCenter website](https://support.lenovo.com/us/en/documents/LNVO-CENTER)  
<https://support.lenovo.com/us/en/documents/LNVO-CENTER>  
Use this website to download tools that support System x and BladeCenter products.
- [Lenovo ServerProven](#)

<http://www.lenovo.com/us/en/serverproven/>

Use this website to obtain information about the hardware compatibility of BladeCenter, Flex, and System x systems with applications and middleware.

- [Lenovo Service and Support](#)

<http://support.lenovo.com/us/en/>

Use this website to obtain service and support information for Lenovo products.

## **Forums**

- [Lenovo Forums website](#)

<https://forums.lenovo.com>

Use this website to access the Lenovo Discuss forums, Knowledge Base, Blog, Support, and Product web pages.



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## Chapter 1. Technical overview

Lenovo ToolsCenter Suite CLI for ThinkServer systems is a collection of server management tools that utilize a command line interface program to manage firmware, hardware, and operating systems using the applications listed in the table below. ToolsCenter Suite CLI is comprised of individual ToolsCenter application modules that are easily updated.

The following table lists the ToolsCenter Suite CLI applications.

*Table 2. ToolsCenter Suite CLI applications*

<b>Application</b>	<b>Description</b>
inventory	<ul style="list-style-type: none"><li>• Inventory and compares devices.</li></ul>

To get started using Lenovo ToolsCenter Suite CLI, see Chapter 3 “Downloading and using ToolsCenter Suite CLI” on page 7.



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## Chapter 2. Hardware and software requirements

Lenovo ToolsCenter Suite CLI has specific hardware and operating system requirements. Before you begin using ToolsCenter Suite CLI, review the topics in this section.

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### Hardware requirements

ToolsCenter Suite CLI supports ThinkServer systems. To successfully run ToolsCenter Suite CLI, the system on which you install ToolsCenter Suite CLI must meet certain hardware requirements.

### Disk space requirements

To install ToolsCenter Suite CLI, the system must have a minimum of 300 MB of disk space.

### Memory requirements

It is recommended that ToolsCenter Suite CLI run on a system with a minimum of 2 GB of physical memory.

### Supported hardware

Use this information to identify systems that are supported by ToolsCenter Suite CLI.

#### Supported Intel and AMD processor-based systems

ToolsCenter Suite CLI supports the following Intel and AMD processor-based systems:

*Table 3. Supported systems*

Server	Machine type
ThinkServer RD340	All
ThinkServer RD350	All
ThinkServer RD440	All
ThinkServer RD450	All
ThinkServer RD540	All
ThinkServer RD550	All
ThinkServer RD640	All
ThinkServer RD650	All
ThinkServer RQ750	All
ThinkServer RS140	All
ThinkServer RS160	All
ThinkServer SD350	5493
ThinkServer TD340	All
ThinkServer TD350	All
ThinkServer TS140	All
ThinkServer TS150	All
ThinkServer TS440	All

Table 3. Supported systems (continued)

Server	Machine type
ThinkServer TS450	All
ThinkServer TS460	All

## Server options

ToolsCenter Suite CLI supports the following third-party vendors:

- Brocade
- Broadcom
- Emulex
- Fusion-IO
- Intel
- LSI
- Mellanox
- QLogic

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## Software requirements

The information in this section describes the required software for ToolsCenter Suite CLI.

To run ToolsCenter Suite CLI, you must have administrator or root-equivalent operating system privileges.

## Required device drivers

It is strongly recommended to have the appropriate service processor device drivers installed and running before running ToolsCenter Suite CLI. This provides access to additional problem determination information, including the hardware event logs.

The following list provides information about collecting device drivers, firmware levels, and log data.

- To collect SCSI and USB device information (including diagnostics), the sg driver must be loaded. Run **lsmod** and verify that the sg driver is loaded before running ToolsCenter Suite CLI. If it is not loaded, run **modprobe sg**.
- To collect Broadcom Ethernet firmware levels, the Broadcom NetXtreme Gigabit Ethernet drivers must be installed. The tg3 driver that is provided by default in current Linux distributions does not export this information. These drivers are available for download from the ToolsCenter Suite CLI at <http://www.lenovo.com/support>.
- To collect LSI Logic 1020/1030 SCSI Controller and RAID information, the mptctl driver must be loaded. Run **lsmod** and verify that the mptctl driver is loaded before running Dynamic System Analysis. If it is not loaded, run **modprobe mptctl**.
- To collect Emulex HBA information from a Linux system, the emulex driver and utility (corekit) must be installed. Run **lsmod** and verify that lpfc and lpfcdfc are loaded before running ToolsCenter Suite CLI.
- To collect Service Processor logs, configuration, and environmental data, the appropriate Service Processor driver must be installed. These drivers are available for download from the <http://www.lenovo.com/support> at <http://www.lenovo.com/support>.
- (Linux only) To update firmware using ToolsCenter Suite CLI on 64-bit Linux operating systems, the 32-bit compatibility library, `compat-libstdc++`, must be installed. You can use the following command to determine if this library is installed: `rpm -qa | grep compat-libstdc++-296`.



- (Linux only) To collect ServeRAID information for ServeRAID controller 7t, 8i, 8k-l, 8k, 8s on systems running Red Hat 5, `libstdc++.so.5` must be installed.
- To collect Emulex FC HBA data, the Emulex utility (**HBACmd**) must be installed.
- To transfer data collections to the support site using sFTP (by default) or FTP, `libcurl` must be installed.
- To use the UpdateXpress comparison analysis feature, the system on which the analysis is performed must have an Internet connection. UpdateXpress versions 4.02 and later are supported.

## Supported browsers

To view the information that is collected by ToolsCenter Suite CLI, you must use one of the following Web browsers.

- Internet Explorer 6.0 Service Pack 1 or later
- Mozilla 1.4.0 or later
- Firefox 1.04 or later

## Supported operating systems

Use the information in this section to identify operating systems that are supported by ToolsCenter Suite CLI.

**Note:** ToolsCenter Suite CLI supports only the English version of an operating system. If you are using a version of the operating system other than English, unreadable information will appear in the log.

### Windows

ToolsCenter Suite CLI supports the following Windows operating systems.

#### Microsoft Windows Server 2016 Editions

- Microsoft Windows Server 2016 (x86-64) (no Nano support)

#### Microsoft Windows Server 2012 Editions

- Microsoft Windows Server 2012 (x86-64)
- Microsoft Windows Server 2012 R2 (x86-64)

#### Microsoft Windows Server 2008 Editions

- Microsoft Windows Server 2008 (x86-64)
- Microsoft Windows Server 2008 R2 (x86-64)

### Linux

ToolsCenter Suite CLI supports the following Linux operating systems.

#### Red Hat

- Red Hat Enterprise Linux 7 Server (x64) Editions (up to U3)
- Red Hat Enterprise Linux 6 Server (x86 & x64) Editions (U5 to U8; U8 only supports x64)

#### SUSE

- SUSE Linux Enterprise Server 12 (x64) (SP2)
- SUSE Linux Enterprise Server 11 (x86 & x64) (SP3/SP4)

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## Chapter 3. Downloading and using ToolsCenter Suite CLI

The topics in this section describe how to download and use Lenovo ToolsCenter Suite CLI. ToolsCenter Suite CLI is a command line interface program that does not require installation.

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### Downloading and using ToolsCenter Suite CLI for Windows

This procedure describes how to download and extract ToolsCenter Suite CLI for Windows.

ToolsCenter Suite CLI is available for download from: [ToolsCenter Suite CLI website](#).

- Step 1. Select a ToolsCenter Suite CLI package for your operating system:
  - `lnvgy_utl_tcli080-1.3.0_winsrvr_x86-64.zip`
- Step 2. Copy the ToolsCenter Suite CLI binary file to the target server or to a removable medium that has been inserted into the target machine.
- Step 3. After downloading the appropriate ToolsCenter Suite CLI zip file, manually extract the files.
- Step 4. Open a Command Prompt window with administrator privileges.
- Step 5. On the command line, enter `cd` to change to the directory where the ToolsCenter Suite CLI binary file is located: `c:\onecli`.
- Step 6. Enter `OneCli.exe` and press the enter key. You are now ready to begin using ToolsCenter Suite CLI.

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### Downloading and using ToolsCenter Suite CLI for Linux

This procedure describes how to download and extract ToolsCenter Suite CLI for Linux.

ToolsCenter Suite CLI is available for download from: [ToolsCenter Suite CLI website](#).

- Step 1. Select a ToolsCenter Suite CLI package for your Linux operating system:
  - `lnvgy_utl_tcli080-1.3.0_rhel6_i386.tgz`
  - `lnvgy_utl_tcli080-1.3.0_rhel6_x86-64.tgz`
  - `lnvgy_utl_tcli080-1.3.0_rhel7_x86-64.tgz`
  - `lnvgy_utl_tcli080-1.3.0_sles11_i386.tgz`
  - `lnvgy_utl_tcli080-1.3.0_sles11_x86-64.tgz`
  - `lnvgy_utl_tcli080-1.3.0_sles12_x86-64.tgz`
- Step 2. Copy the ToolsCenter Suite CLI binary file to the target server or to a removable medium that has been inserted into the target machine.
- Step 3. After downloading the appropriate ToolsCenter Suite CLI TGZ file, issue the `tar -xf binary_name` command to complete the file extraction.
- Step 4. Open a Linux Terminal window.
- Step 5. On the command line, enter `cd` to change to the directory where the ToolsCenter Suite CLI binary file is located.
- Step 6. Enter `./OneCli` and press the enter key. You are now ready to begin using ToolsCenter Suite CLI.

**Note:** Do not extract the files in Windows and then copy the extracted files to Linux. There is link information between the \*.o files, and extraction in Windows will cause this information to be lost.

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## ToolsCenter Suite CLI applications and commands

Applications represent each of the ToolsCenter Suite CLI functions. Applications map to the latest individual tool level, making tool updates quick and easy. ToolsCenter Suite CLI currently has the following applications:

- inventory

Commands are used in conjunction with applications. Each application supports a different set of commands. Commands map to the current individual tool function level.

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## Application and command syntax

All of the ToolsCenter Suite CLI applications use the same basic application and command syntax, customizable by varying commands and parameters.

### ToolsCenter Suite CLI application and command syntax

```
./0necli <or> onecli.exe <application><command>[command option][connectoption]
```

**Note:** ./0necli is for Linux, and onecli.exe is for Windows.

To execute a ToolsCenter Suite CLI application, on a command line, enter the command string and press Enter.

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## Chapter 4. Inventory

The topics in this section describe how to use the Lenovo ToolsCenter Suite CLInventory application and commands to acquire system information for ThinkServer systems.

This table lists the inventory application commands.

*Table 4. Inventory application commands*

<b>Command</b>	<b>Description</b>
getdevices	Gets the supported device inventory list.
getinfor	Gets device inventory information.
formatlog	Translates the <b>getinfor</b> XML file content into other formats, such as HTML.
upload	Uploads the <b>getinfor</b> XML file content to a specified server.

---

## getdevices command

Use the **getdevices** command to display all of the system device list. The output generated from this command can be used with the **getinfor** command.

### getdevices command syntax

```
OneCli.exe inventory getdevices [<options>]
```

Table 5. *getdevices* command parameters

Parameter	Required/Optional	Notes
--output	Optional	By default, the log file output is saved to: <code>../Onecli-%PID -%date%-%time%/</code> . <b>Note:</b> Arguments for the --output parameter are case sensitive.

---

## getinfor command

Use the **getinfor** command to generate device inventory information after using the **getdevices** command to obtain the device list. By default, the device list is output to the XML file.

### getinfor command syntax

```
0necli.exe inventory getinfor [--device <device name|all>] [--output <folder>] [--upload [ftp://username:password@ftphost/path  
[--proxy userid:password@IP[:port]]] [--htmlreport]
```

Table 6. *getinfor* command parameters

Parameter	Required/Optional	Notes
--device	Optional	<b>all</b> The default value. Displays all of the supported settings. <b>system_overview, processes</b> Gets the complete list of supported devices.
--output	Optional	<ul style="list-style-type: none"><li>By default, the log file output is saved to: <code>../0necli-%PID%- %date%- %time%/</code>.</li><li>The <code>0necli-inventory.zip</code> file is saved to this folder. If the files already exists, they will be overwritten.</li></ul>
--upload	Optional	<ul style="list-style-type: none"><li>If the <b>server address</b> is specified, then the output files are uploaded the specified server.</li><li>If not specified, there is no upload.</li></ul>
--proxy	Optional	Use proxy to connect to upload server. <b>Note:</b> Both IPv4 and IPv6 addresses are supported. Enclose IPv6 addresses in brackets. For example, <code>[FE80::3BA7:94FF:FE07:CB00]</code> .
--htmlreport	Optional	Output contains HTML format.

---

## formatlog command

Use the **formatlog** command to save the ZIP file that contains multiple XML files, which were created by the **getinfor** command. The **formatlog** command translates these files to another format, such as HTML or TXT.

### formatlog command syntax

```
OneCli.exe inventory formatlog [--srcdata][--output][--hldec]
```

Table 7. formatlog command parameters

Parameter	Required/Optional	Notes
--srcdata	Required	
--output	Optional	By default, the output is saved to <code>../Onecli-%PID%-%date%-%time%/</code> . The <code>Onecli-update-compare.html</code> file is saved in this folder. If the file already exists, it will be overwritten.



---

## upload command

Use the **upload** command to upload log files to a server. The XML log files are generated using the **getinfo** command. If the **upload** command is specified, the log file is automatically uploaded to the specified server.

### upload command syntax

```
Onecli.exe inventory upload [--srcdata <file>] [--upload ftp://username:password@ftphost/path/] [--proxy userid:password@IP<[:p
```

Table 8. *upload command parameters*

Parameter	Required/Optional	Notes
--srcdata	Required	Used to identify the log file that will be formatted and uploaded to a server.
--upload	Required	<ul style="list-style-type: none"><li>• If <b>serveraddress</b> is specified, upload the output files to this server.</li><li>• If not specified, there is no upload.</li></ul>
--proxy	Optional	Use proxy to connect to upload server. <b>Note:</b> Both IPv4 and IPv6 addresses are supported. Enclose IPv6 addresses in brackets. For example, [FE80::3BA7:94FF:FE07:CB0D].



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## Chapter 5. Troubleshooting and support

Use this section to troubleshoot and resolve problems with Lenovo ToolsCenter Suite CLI.

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### Known limitations

ToolsCenter Suite CLI has the following general limitation.

#### **ToolsCenter Suite CLI System Overview page shows wrong OS suite type on Windows server 2012 series OS (Retain tip 95945)**

The ToolsCenter Suite CLI System Overview page shows the wrong OS suite type for the Windows server 2012 series operating system: the suite type will be always shown as "Standard Edition" on the inventory page. For the Windows 8 and Windows Server 2012 operating systems, since the suite type is not supported by winAPI, refer to the MSDN at <https://msdn.microsoft.com/en-us/library/ms724833%28d=printer,v=vs.85%29.aspx> for information.

#### **ToolsCenter Suite CLI can't display "Other Devices" on RHEL6 and RHEL7 (Retain tip 91732)**

The ToolsCenter Suite CLI is unable to parse the configuration file "/etc/sysconfig/hwconf" to collect "OtherDevice" information for RHEL6 and RHEL7 due to lack of Kudzu support.

#### **ToolsCenter Suite CLI shows the volumes' layout and status unknown on windows 2012 series OS (Retain tip 95943)**

The ToolsCenter Suite CLI shows the volume layout and status as unknown for Windows 2012 series operating systems when the partition type is static. Since the ToolsCenter Suite CLI will attempt to read the LDM (logical disk management) data from the Windows operating system for these properties, and LDM was deprecated in favor of Storage Spaces for Windows 8 and Windows 2012, the ToolsCenter Suite CLI shows an unknown status for these two properties of a static disk.

#### **ToolsCenter Suite CLI might show garbled or unreadable characters in some inventory results**

The ToolsCenter Suite CLI acquires raw data from the system, some of which is random or unreadable by humans, and does not filter it prior to display. The unreadable characters are isolated occurrences that appear in line with readable text.

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### Return codes

ToolsCenter Suite CLI issues a return code to indicate either successful execution of a command or to indicate an error occurred while the program was running. A return code of zero indicates the operation was successful, and a nonzero return code indicates an error.

To determine whether any errors occurred and when based on the associated timestamp, refer to one of the following log files:

- For Windows, review the C:\Lenovo\_Support\onecli.log file.
- For Linux, review the /var/log/Lenovo\_Support/onecli.log file.

The ToolsCenter Suite CLI return codes table provides a complete list of all return codes.

Table 9. ToolsCenter Suite CLI return codes

Return code	Decimal base	Description
0x00	0	Success
0x01	1	Invalid command line
0x02	2	Generic Failure

Table 9. ToolsCenter Suite CLI return codes (continued)

Return code	Decimal base	Description
0x03	3	XML File missing
0x04	4	Reboot Failure
0x05	5	Connect Failure
0x06	6	Platform Error
0x07	7	XML Format Error
0x08	8	Open DLL Failure
0x09	9	Get NULL Pointer
0x0A	10	No Interface Found
0x0B	11	Return Invalid Result
0x0C-0x1F	12-31	Reserved Generic Common Failure
0x20-0x3F	32-63	Inventory Diagnose application error
0x40-0x5F	64-95	Update application error
0x60-0x7F	96-127	Configuration application error
0x80-0x9F	128-159	FoD application error
0xA0-0xDF	160-223	Misc applications error
0xE0-0xFF	224-255	Reserved

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## Appendix A. Accessibility features for ToolsCenter Suite CLI

Accessibility features help users who have a disability, such as restricted mobility or limited vision, to use information technology products successfully.

### Lenovo and accessibility

See the [Lenovo Accessibility](http://www.lenovo.com/lenovo/us/en/accessibility.html) website at <http://www.lenovo.com/lenovo/us/en/accessibility.html> for more information about the commitment that Lenovo has to accessibility.

### Accessibility

The following list includes the major accessibility features in Lenovo ToolsCenter Suite CLI:

- Can be operated using only the keyboard
- Communicates all information independent of color
- Supports the attachment of alternate output devices
- Provides online documentation in an accessible format

### Keyboard navigation

This product uses standard Microsoft Windows navigation keys.

The command line interface (CLI) is controlled by the keyboard.

You can use the following keyboard shortcuts from the graphical user interface:

Shortcut (Linux)	Shortcut ( Windows)	Action
Alt+C	Alt+C	Close the graphical user interface.
Alt+N	Alt+N	Go to the next page.
Alt+P	Alt+P	Go to the previous page.
Tab	Tab	Go to the next control.
Shift+Tab	Shift+Tab	Move to the previous control.
Left arrow	Left arrow	Move back one character.
Right arrow	Right arrow	Move forward one character.
Backspace	Backspace	Delete the character to the left of the cursor.
Delete	Delete	Delete the character under the cursor.
Up arrow	Up arrow	Move focus and selection upwards through the radio buttons.
Down arrow	Down arrow	Move focus and selection downwards through the radio buttons.
Space	Space	Select or clear an option.



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## Appendix B. Notices

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## Important notes

Processor speed indicates the internal clock speed of the microprocessor; other factors also affect application performance.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1 024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity can vary depending on operating environments.

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