



Lenovo Desktop BIOS WMI Deployment Guide

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Revision History

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1.0	Initial version	2016/2/25
1.1	Updated WMI interface for BIOS Password	2016/12/19
1.2	Update description to boot order with set config script	2017/6/14
1.3	1. Update the LoadDefaultPassword.vbs 2. Add comments for some items list that need Administrator password already set while change the setting.	2017/10/10
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Preface

The purpose of this guide is to explain how to modify BIOS settings, boot order using Windows Management Instrumentation (WMI) through the Lenovo client-management interface. This guide is intended for skilled IT administrators who are familiar with configuring BIOS settings on computers in their organizations.

This guide is provided in a ZIP file package that contains this deployment guide as well as Visual Basic sample scripts to use when configuring BIOS settings. Please see “Systems announced before 2017.zip” and “Systems announced in 2017 or later.zip”

This deployment guide is developed for IT professionals to assist with the unique challenges that they encounter. If you have suggestions or comments, communicate with your Lenovo[®] authorized representative. To learn more about the technologies that can help you lower the total cost of ownership and to check for periodic updates to this guide, visit the following Web site:

www.lenovo.com/support

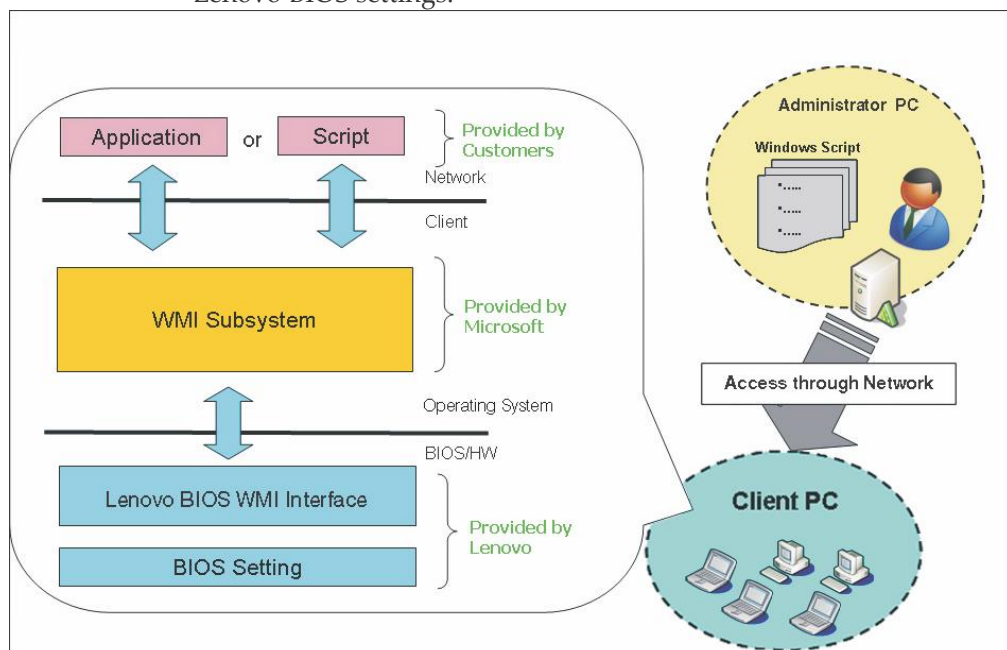
Chapter 1. Overview

IT administrators are always looking for easier ways to manage client computer BIOS settings, which include hardware settings, and the boot order. The Lenovo BIOS WMI interface provides a simplified way to change these settings. Lenovo has developed a BIOS interface that can be manipulated through Windows Management Instrumentation (WMI). The Lenovo BIOS WMI interface enables IT administrators to make queries on current BIOS settings, restore settings to their factory defaults, change single settings, reset or change passwords, and modify the boot order either at client computers or remotely.

Using Windows Management Instrumentation

WMI is provided as a standard feature in most Windows® operating systems. It provides a powerful set of functions, such as query-based information retrieval and event notification, which enables users to manage both local and remote computers. The Lenovo BIOS WMI interface extends the capabilities of WMI to allow management of BIOS settings.

The following illustration shows how WMI can be used to access Lenovo BIOS settings.



WMI uses Windows Script host (WSH) to interpret scripts. You can write your scripts in either Windows Visual Basic Scripting Edition (VBScript) or JavaScript.

Key benefits

The Lenovo BIOS WMI interface provides the following benefits:

Function

- Flexible BIOS configuration, including the ability to change a single BIOS setting or all BIOS settings
- Bios password management , including update Administrator passwords, power-on passwords(POP), hard disk drive(HDD)passwords
- No dependency on a specific BIOS level

Environment

- Remote or local capabilities
- Support of unattended operations
- No software installation, including managed object format (MOF), required
- Replaces DOS-based BIOS configuration tools

Interface

- Easy to adopt for various management servers
- Replaces current SMI interface
- Common interface for different products

Supported computers

BIOS setup through WMI described in this document is supported on ThinkCentre and ThinkStation s products only:

Chapter 2. Script Classes and Parameter

This chapter contains WMI implementation details for configuring BIOS settings.

Configuring BIOS settings

The following interface details can be used to access Lenovo BIOS settings.

- Namespace: "\root\WMI"
- Base Class: "Lenovo_BIOSElement"
- Interface details (see [Table 1](#))

Table 1. Interface Details

Class Name	Type	Parameter/Return	Example
Lenovo_BiosSetting	Query	CurrentSetting:"Item,Value"	"Wake Up on LAN, Eanbled"
Lenovo_SetBiosSetting	Method	"Item,Value;"	"Wake Up on LAN,Disabled;"
Lenovo_SaveBiosSettings	Method	","	","
Lenovo_DiscardBiosSettings	Method	","	","
Lenovo_LoadDefaultSettings	Method	","	","
Lenovo_BiosPasswordSettings	Query	PasswordMode:"Value" -0:Legacy Mode -Others: Reserved PasswordState:"Value" -BIT0=1: User password is installed -BIT1=1:Admin password is installed -BIT2=1:Hard disk passwords are installed -BIT3=1:System Management password is installed MinLength:"Value" -1:always one byte MaxLength:"Value" -64:always 64 byte SupportedKeyboard:"Value" -BIT0=1:Support US keyboard -BIT1=1:Support French keyboard -BIT2=1:Support German keyboard SupportedEncodings:"Value" -BIT0=1: support ASCII password input -BIT1=1:support scancode password input Port0HardDiskPasswordState:"Value" -BIT0=1:User hard disk password is installed -BIT1=1:Master hard disk password is installed Port1HardDiskPasswordState:"Value" Port2HardDiskPasswordState:"Value" Port3HardDiskPasswordState:"Value" Port4HardDiskPasswordState:"Value" Port5HardDiskPasswordState:"Value"	PasswordMode:1 PasswordState:0 MinLength:1 MaxLength:64 SuportedKeyboard:7 SupportedEncodings:3 Port0HardDiskPasswordState:00 Port1HardDiskPasswordState:00 Port2HardDiskPasswordState:00 Port3HardDiskPasswordState:00 Port4HardDiskPasswordState:00 Port5HardDiskPasswordState:00
Lenovo_SetBiosPassword	Method	"PasswordType,CurrentPassword,NewPassword,Encoding,KbdLang;"	"pop,oldpop,newpop,ascii,us;"
Lenovo_WmiOpcodeInterface	Method	WmiOpcodePasswordAdmin:Administrator password; WmiOpcodePasswordType:passwo	WmiOpcodePasswordType:pap; WmiOpcodePasswo

		rd type; WmiOpcodePasswordCurrent01:cu rrent password; WmiOpcodePasswordNew01: New password; WmiOpcodePasswordSetUpdate;	rdCurrent01:123; WmiOpcodePasswo rdNew01:456; WmiOpcodePasswo rdSetUpdate;
--	--	---	--

Notes:

1. See [Appendix A, "Sample Visual Basic scripts for configuring BIOS settings,"](#) on page 19 for Visual Basic sample scripts.
2. See [Table 5 on page 6](#) for a listing of acceptable setting names.
3. Lenovo_SetBiosPassword is for computers that produced before the year 2017, the year 2017 or later produced computers should use Lenovo_WmiOpcodeInterface to update BIOS password.

Return types

You will receive one of the following return types after making changes to BIOS settings:

Table 2. Return Types

Return Type	Description
Success	Operation completed successfully.
Not Supported	The feature is not supported on this system.
Invalid Parameter	The item or value provided is not valid.
Access Denied	The change could not be made due to an authentication problem. If a supervisor password exists, the correct supervisor password must be provided.
System Busy	BIOS changes have already been made that need to be committed. Reboot the system and try again
Item is show only, inaccessible.	The item cannot be changed , just could show the status.

Password Authentication

If an Administrator password is already set, you must specify that administrator password before you can change any BIOS settings.

The format for password parameters are different from old computers to 2017 or later produced computers.

[Table 3](#) described the password parameters for old computers that produced before 2017.

[Table 4](#) described the password parameters for 2017 or later produced computers.

The format for password parameters is "abc,ascii,us" with descriptions in Table 3. For Example, if the Current password is "abc", Password encoding is "ascii", Keyboard language is "ascii" Lenovo_SaveBiosSettings should be called with parameters as "abc,ascii,us".

Table 3.	Description	Possible selections
Parameter 1	Current password	• "abc" - raw ascii character • "1e302e" - scancode
Parameter 2	Password encoding	• "ascii" • "scancode"
Parameter 3	Keyboard languages (valid only if encoding is "ascii")	• "us" - English US, English, French-Canadian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Spanish-European, Spanish-Latin American, Swiss, Turkish • "fr" - French-European, Belgian • "gr" - German, Czech, Slovak, Slovenian

For 2017 or later computers, you need first call Class Lenovo_WmiOpcodeInterface with below parameters before change any BIOS settings, and the password just support ascii encode.

Please refer to Table 8 for the supported characters

Table 4.

Parameter	Description	Possible selections
Parameter 1	Current password, need begin with the key words: WmiOpcodePasswordAdmin:	For example, if BIOS password is set with "abc", WmiOpcodePasswordAdmin:abc;

Available BIOS setting names

Some BIOS settings are dependent on the presence of certain hardware features. Settings might vary on different computers.

Notes:

1. BIOS settings and values are case sensitive.
2. The security-related options will not be changed on the "load default" operation.
3. For computers designed in 2019 and later WMI naming has changed. Please refer to the listing created by ListAll.vbs for supported WMI names and options.

Table 5. List of some available BIOS settings just for reference.

Item Name	Option Value	Related item
Serial Port1 Address	"Disabled", "3F8/IRQ4", "2F8/IRQ3", "3E8/IRQ4", "2E8/IRQ3"	N

Serial Port2 Address	"Disabled", "2F8/IRQ3", "2E8/IRQ3"	N
Parallel Port Address	"Disabled", "378", "278", "3BC"	N
Parallel Port Mode	"ECP+EPP", "ECP", "EPP"	Parallel Port Address
EPP Version	"1.9", "1.7"	Parallel Port Address
ECP Mode DMA Channel	"DMA3", "DMA1"	Parallel Port Address
Parallel Port IRQ	"IRQ7", "IRQ5"	Parallel Port Address
USB Port Access	"Enabled", "Disabled"	N
USB BIOS Support	"Enabled", "Disabled"	USB Port Access
Front USB Ports	"Enabled", "Disabled"	USB Port Access
Rear USB Ports	"Enabled", "Disabled"	USB Port Access
USB Port 1	"Enabled", "Disabled"	USB Port Access & Front USB Ports
USB Port 2	"Enabled", "Disabled"	USB Port Access & Front USB Ports
USB Port 3	"Enabled", "Disabled"	USB Port Access & Rear USB Ports
USB Port 4	"Enabled", "Disabled"	USB Port Access & Rear USB Ports
USB Port 5	"Enabled", "Disabled"	USB Port Access & Rear USB Ports
USB Port 6	"Enabled", "Disabled"	USB Port Access & Rear USB Ports
USB Port 7	"Enabled", "Disabled"	USB Port Access & Rear USB Ports
USB Port 8	"Enabled", "Disabled"	USB Port Access & Rear USB Ports
USB Port 9	"Enabled", "Disabled"	USB Port Access & Front USB Ports
USB Port 10	"Enabled", "Disabled"	USB Port Access & Front USB Ports
SATA Controller	"Enabled", "Disabled"	N
SATA Drive 1	"Enabled", "Disabled"	SATA Controller
SATA Drive 2	"Enabled", "Disabled"	SATA Controller

SATA Drive 3	"Enabled", "Disabled"	SATA Controller
SATA Drive 4	"Enabled", "Disabled"	SATA Controller
Configure SATA as	"IDE", "AHCI", "RAID", "Intel(R) RST with Intel(R) Optane"	SATA Controller
Select Active Video	"IGD", "PCI", "PEG", "Auto"	N
Pre-Allocated Memory Size	"32MB", "64MB", "128MB", "256MB", "512MB", "1024MB"	Select Active Video
Total Graphics Memory	"128MB", "256MB", "Maximum"	Select Active Video
Onboard Audio Controller	"Enabled", "Disabled"	N
Onboard Ethernet Controller	"Enabled", "Disabled"	N
PXE Option ROM	"Enabled", "Disable"	Onboard Ethernet Controller
EIST Support	"Disabled", "Enabled"	N
Core Multi-Processing	"Enabled", "Disabled"	N
Hyper Threading Technology	"Disabled", "Enabled"	N
Intel (R)Virtualization Technology	"Disabled", "Enabled"	N
VT-d	"Enabled", "Disabled"	Intel (R) Virtualization Technology
TxT	"Enabled", "Disabled"	Intel (R) Virtualization Technology or VT-d
C State Supported	"C1", "C1C3", "C1C3C6", "C1C3C6 C7"	N
Turbo Mode	"Disabled", "Enabled"	N
Intel(R) Manageability Control	"Disabled", "Enabled"	Onboard Ethernet Controller
Intel(R) Manageability Reset	"Disabled", "Enabled"	Onboard Ethernet Controller
Press <CTRL-P> to enter MEBx	"Disabled", "Enabled"	Onboard Ethernet Controller
Intel(R) SIPP Support	"Enabled", "Disabled"	N
After Power Loss	"Power Off", "Power On", "Last State"	N
Enhanced Power Saving Mode	"Disabled", "Enabled"	N

ICE Performance Modes	Best Performance/Best Experience/Full Speed	N
Wake Up on LAN	"Primary", "Automatic", "Disabled"	N
Wake from Serial Port Ring	"Primary", "Automatic", "Disabled"	N
Wake Up on Alarm	"Single Event", "Daily Event", "Weekly Event", "Disabled"	N
Startup Sequence	"Primary", "Automatic"	Wake Up on Alarm
Alarm Time (HH:MM:SS)	00:00:00	Wake Up on Alarm
Alarm Date (MM/DD/YYYY)	01/01/1999	Wake Up on Alarm
Alarm Day of Week	"Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday"	Wake Up on Alarm
Primary Boot Sequence	"USB FDD", "USB Key", "SATA 1", "SATA 2", "SATA 3", "SATA 4", "SATA 5", "SATA 6", "Network 1", "USB HDD", "USB CDROM"	SATA Controller& Onboard Ethernet Controller& USB Support
Automatic Boot Sequence		SATA Controller& Onboard Ethernet Controller& USB Support
Error Boot Sequence		SATA Controller& Onboard Ethernet Controller& USB Support
CSM ^{note*2}	Enabled/Disabled	CSM
Boot Mode	"Auto", "UEFI", "Legacy"	CSM
Boot Priority	"UEFI First", "Legacy First"	Boot Mode
Quick Boot	"Enabled", "Disabled"	N
Boot Up Num-Lock Status	"On", "Off"	N
Option Keys Display	"Disabled", "Enabled"	N
Option Keys Display Style	"Normal", "Legacy"	N
Startup Device Menu Prompt	"Enabled", "Disabled"	N
Serial Number Style ^{note*1}	"Legacy Style", "MTM&SN-1", "MTM&SN-2", "1S-MTM-SN"	N
Secure Boot ^{note*2}	Enabled/Disabled	Secure Boot

Device Guard ^{note*2}	Enabled/ Disabled	Device Guard
OS Optimized Defaults ^{note*2}	Enabled/ Disabled	OS Optimized Defaults

Note:

Note*1:

For “Serial Number Style”:

Legacy Style means display the legacy seven-digit serial number

MTM&SN-1 means concatenation of Machine Type with Serial Number

(mmmmsssssss)

MTM&SN-2 means concatenation of Machine Type/Model and Serial Number

(mmmmmmsssssss)

1S-MTM-SN means concatenation of "1S", Machine Type/Model and Serial Number

(1Smmmmmmsssssss)

Note*2:

For those Marked items that need set BIOS Administrator Password first in BIOS setup, then could downgrade the security level, as below:

Items	The state to set
Device Guard	Disabled
Secure boot	Disabled
OS optimized Default	Disabled
CSM	Enabled

Note*3:

The items listed in Table 5 are for reference only. For actual WMI labels please refer to the listing created by ListAll.vbs.

Chapter 3. Typical Usage

Through WMI, you can configure BIOS settings in the following ways:

- List BIOS settings
- Change BIOS settings
- Change the boot order (sometimes referred to as the startup sequence)
- Load default BIOS settings

Listing current BIOS settings

For a list of all available BIOS settings that can be changed through WMI on a specific computer, use the `Lenovo_BiosSetting` class (see [“List all BIOS settings on the local computer” on page 22](#) and [“List all BIOS settings on a remote computer” on page 26](#) for sample scripts).

See Table 4 on page 6 for a list of available BIOS settings.

Changing BIOS settings

To change a BIOS setting, complete the following steps:

1. Identify the BIOS setting you want to change using the `Lenovo_BiosSetting` class (see [“List all BIOS settings on the local computer” on page 22](#) and [“List all BIOS settings on a remote computer” on page 26](#) for sample scripts).
2. Identify the value to which the setting will be changed.

Note: See [Table 5 on page 6](#) for a list of available values for a particular setting.

3. Change the BIOS setting to the desired value using the `Lenovo_SetBiosSetting` class, then use the `Lenovo_SaveBiosSetting` class to save the settings (see [“Set a single BIOS setting on the local computer” on page 22](#) and [“Set a single BIOS setting on a remote computer” on page 27](#) for sample scripts).

Note:

1. BIOS settings and values are case sensitive.
2. Settings may differ from projects; make sure List settings first to identify the BIOS setting wants to change.
3. After making changes to the BIOS settings, you must reboot the computer before the changes will take effect.

Changing the boot order

To change the boot order, complete the following steps:

1. Determine the current setting for "BootOrder" by using the Lenovo_BiosSetting class (see ["List all BIOS settings on the local computer" on page 22](#) and ["List all BIOS settings on the remote computer" on page 26](#) for sample scripts).
2. To set a new boot order, use the Lenovo_SetBiosSetting class, then use the Lenovo_SaveBiosSetting class to save the settings (see ["Set a single BIOS setting on the local computer" on page 22](#) and ["Set a single BIOS setting on a remote computer" on page 27](#) for sample scripts). Specify a new boot order by listing the boot devices in order, separated by colons. Devices that are not specified are excluded from the boot order. In the following example, the Network Card drive is the first boot device and SATA drive 1 is the second boot device and so on.

Example: Change primary boot sequence,

"Primary Boot Sequence" "Network 1:SATA 1:USB HDD:SATA 2:USB CDROM:USB Key"

Note:

1. "Boot Order" settings are case sensitive.
2. Settings may differ from projects, recommend List all settings first to identify the BIOS setting wants to change, and put all the listed device to the script parameters, just sequence could be changed .
3. After making changes to the BIOS settings, you must reboot the computer before the changes will take effect.

Restoring default settings

To restore default BIOS settings, use the Lenovo_LoadDefaultSettings class, and then use the Lenovo_SaveBiosSettings class to save the BIOS changes (see sample scripts).

Changing an existing hardware password

There are different methods to change passwords on systems announced before 2017 and systems announced in 2017 and later.

Changing passwords on systems announced before 2017:

The format for password parameters is "pap,abc,def,ascii,us" with descriptions in [Table 6](#) (see "Set a Administrator password on the local computer when a Administrator password exists" on page 24 and "Set a Administrator password on a remote computer when a Administrator password exists" on page 28 for sample scripts).

Table 6. Password parameters format, changing existing hardware password

Parameter	Description	Possible selections
Parameter 1	Password type string	"pap":Administrator password "pop":Power-on password
Parameter 2	Current password	"abc":raw ascii character "1e302e":scancode

	string	
Parameter 3	New password string	"def":raw ascii character "201221":scancode
Parameter 4	Password encoding	"ascii" "Scancode"
Parameter 5	Keyboard Languages	• "us" - English US, English UK, Chinese-Traditional, Danish, Dutch, French-Canadian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Spanish-European, Spanish-Latin American, Swiss, Turkish • "fr" - French-European, Belgian • "gr" - German, Czech, Slovak, Slovenian

Changing passwords on systems announced in 2017 or later:

The format for password parameters is as below:

For example, Password Type is pap, current password is 123, new password will be 456. The parameter should be:

```
WmiOpcodePasswordType:pap;
WmiOpcodePasswordCurrent01:123;
WmiOpcodePasswordNew01:456;
WmiOpcodePasswordSetUpdate;
```

The different parameters with different key words, each parameter need a Lenovo_WmiOpcodeInterface method call, and the parameter "WmiOpcodePasswordSetUpdate;" MUST be the LAST call to make the change take effect.

The parameters are described in [Table 7](#), the supported characters are listed in [Table 8](#).

(see "Set a Administrator password on the local computer when a Administrator password exists" on page 24 and "Set a Administrator password on a remote computer when a Administrator password exists" on page 28 for sample scripts).

Table 7

Parameter	Description	Possible selections
WmiOpcodePasswordType	Password Type String	"pap":Administrator password "pop":Power-on password "smp";System Management Password uhdp: User HDD password. mhdpx: Master HDD password unvpx: User NVMe passwords mnvpx: Master NVMe password SS x = 0 ~ 16, means the current HDD/NVMe's num Example: WmiOpcodePasswordType:pap;

WmiOpcodePasswordCurrent01	Current password string	“abc”:raw ascii character Example: WmiOpcodePasswordCurrent01:abc;
WmiOpcodePasswordNew01	New password string	“def”:raw ascii character Example: WmiOpcodePasswordCurrent01:def;
WmiOpcodePasswordSetUpdate	The last parameter to make the change take effect	WmiOpcodePasswordSetUpdate;

Table 8 – Supported characters

character	Remark
0 – 9	Numeral
A – Z / a – z	Letter
!	Exclamation mark
”	Quotation mark
#	Number sign, Hashtag, Octothorpe, Sharp
\$	Dollar sign
%	Percent sign
&	Ampersand
'	Apostrophe
(	Left parenthesis
)	Right parenthesis
*	Asterisk
+	Plus sign
,	Comma
–	Hyphen-minus
.	Full stop
/	Slash (Solidus)
:	Colon
;	Semicolon
<	Less-than sign
=	Equal sign
>	Greater-than sign
?	Question mark
@	At sign
[	Left Square Bracket
\	Backslash
]	Right Square Bracket
^	Circumflex accent
_	Low line
`	Grave accent
{	Left Curly Bracket
	Vertical bar
}	Right Curly Bracket
~	Tilde, Wave

	Space	
--	-------	--

Limitations

The following WMI limitations exist for BIOS setup:

- Administrator password, POP ,SMP and HDP cannot be changed simultaneously during one power cycle. If you want to change these settings, you must reboot the system after changing one of them.
- A password cannot be set using this method before there already exists one. Passwords can only be updated or cleared.
- When users try to batch update BIOS settings, make sure that the dependencies for each item is in the correct state, because once one item's related item is "Disabled" or with special setting, this item will be hidden and cannot be updated through WMI. Please reference [Table 5](#) for detail relationship between items.

Chapter 4. Security

WMI-based administration scripts operating over a remote connection send data over the network in clear text by default. You can enhance security by modifying WMI-based administration scripts to establish an encrypted remote connection as follows:

1. Set an impersonation level of "impersonate"
2. Set an authentication level of "pktPrivacy"

See [Appendix A, "Sample Visual Basic scripts for configuring BIOS settings," on page 21](#) for sample scripts used to implement WMI-based administration scripts that include these parameters for encryption.

Appendix A. Sample Visual Basic scripts for configuring BIOS settings

The Visual Basic command line scripts below are examples that you may find helpful when configuring BIOS settings.

The scripts below can be used as-is on Windows XP, Windows Vista or Windows 7 / Windows 10 to modify BIOS settings on your Lenovo computer. The scripts can be executed on a command prompt using the cscript.exe utility. On Windows Vista or later systems, you must run the scripts from an administrator command prompt.

Note: The scripts in this appendix are for reference only. Pay attention to that symbol ";" is treated as the end of parameter in script, so make sure each method input parameter in script will end with ";"

Restore default settings

Use the sample scripts below as templates to restore default settings on the local computer.

Syntax: cscript.exe LoadDefaults.vbs

Example: cscript.exe LoadDefaults.vbs

```
,
' Load default BIOS settings
,
On Error Resume Next
Dim colItems

strComputer = "LOCALHOST" 'Change as needed
Set objWMIService = GetObject("WinMgmts:" _
& "{ImpersonationLevel=Impersonate}!\\" & strComputer _
& "\root\wmi")

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_LoadDefaultSettings")

strReturn = "error"
For Each objItem in colItems
    ObjItem.LoadDefaultSettings ";" , strReturn
Next

WScript.Echo " LoadDefaultSettings: " + strReturn

If strReturn < > "Success" Then
    WScript.Quit
End If
```

List all BIOS settings on the local computer

Use the sample scripts below as templates to list all BIOS settings and values on the local computer.

Syntax: cscript.exe ListAll.vbs

Example: cscript.exe ListAll.vbs

```
,
' List all BIOS settings
,
On   Error Resume Next
Dim collItems

strComputer = "LOCALHOST"           ' Change as needed.
Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate}!\\" & strComputer _
&"\root\wmi")
Set collItems = objWMIService.ExecQuery("Select * from
Lenovo_BiosSetting")
For Each objItem in collItems
    If Len(objItem.CurrentSetting) > 0 Then
        Setting = ObjItem.CurrentSetting
        StrItem = Left(ObjItem.CurrentSetting,InStr(
            ObjItem.CurrentSetting, ",")-1)
        StrValue = Mid(ObjItem.CurrentSetting,InStr(
            ObjItem.CurrentSetting, ",")-1)
        WScript.Echo StrItem + " = " + StrValue
    End If
Next
```

Set a single BIOS setting on the local computer

Use the sample scripts below as templates to set a single BIOS setting on the local computer.

Syntax: cscript.exe SetConfig.vbs [Item] [Value]

Example: cscript.exe SetConfig.vbs "Wake Up on LAN" Disabled

If change boot order,

Example if change the primary Boot Sequence:

cscript.exe SetConfig.vbs "Primary Boot Sequence" "Network

1:SATA 1:USB HDD:SATA 2:USB CDROM:USB Key"

```
,
' Set specific BIOS Setting
,
On   Error Resume Next
Dim collItems

If WScript.Arguments.Count < > 2 Then
    WScript.Echo "SetConfig.vbs [setting] [value]"
    WScript.Quit
End If
strRequest = WScript.Arguments(0) + "," + WScript.Arguments(1) +
","
strComputer = "LOCALHOST"           ' Change as needed.
Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate}!\\" & strComputer _
&"\root\wmi")
Set collItems = objWMIService.ExecQuery("Select * from
Lenovo_SetBiosSetting")

For Each objItem in collItems
    ObjItem.SetBiosSetting strRequest, strReturn
```

```

Next

WScript.Echo strRequest
WScript.Echo "    SetBiosSetting: " + strReturn

If strReturn <> "Success" Then
    WScript.Quit
End If

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SaveBiosSettings)

strReturn = "error"
For Each objItem in colItems
    ObjItem.SaveBiosSettings ";", strReturn
Next

WScript.Echo strRequest
WScript.Echo "    SaveBiosSettings: " + strReturn

```

Restore default settings if a Administrator password exists

Use the sample scripts below as templates to restore default settings on the local computer.

Syntax: cscript.exe LoadDefaultPassword.vbs

Example: cscript.exe LoadDefaultPassword.vbs

```

'
'Load default BIOS settings on local system
'
On Error Resume Next
Dim colItems

If WScript.Arguments.Count <> 1 Then
    WScript.Echo "LoadDefaultPassword.vbs [Password]"
    WScript.Quit
End If
strSecurityAdmin = "WmiOpcodePasswordAdmin:" +
WScript.Arguments(0) + ";"
strComputer = "LOCALHOST" 'Change as needed.
Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate}!\\" & strComputer &
"\root\wmi")

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_WmiOpcodeInterface")

strReturn = "error"

For Each objItem in colItems
    ObjItem.WmiOpcodeInterface strSecurityAdmin, strReturn
Next

```

```

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_LoadDefaultSettings")

strReturn = "error"
For Each objItem in colItems
ObjItem.LoadDefaultSettings ";", strReturn
Next

WScript.Echo " LoadDefaultSettings: " + strReturn

If strReturn <> "Success" Then
WScript.Quit
End If

```

Set a single BIOS setting on the local computer if a Administrator password exists

Use the below sample scripts as templates to set a single BIOS setting on the local computer.

On systems announced before 2017:

```

Syntax: cscript.exe SetConfigPassword.vbs [Item] [Value]
[Password+Encoding]
Example: cscript.exe SetConfigPassword.vbs "Wake Up on LAN"
Disabled "pass,ascii,us"

,
' Set specific BIOS Setting
,

On Error Resume Next
Dim colItems

If WScript.Arguments.Count < > 3 Then
WScript.Echo "SetConfigPassword.vbs [setting] [value]
[password+encoding]"
WScript.Quit
End If
strRequest = WScript.Arguments(0) + "," + WScript.Arguments(1) +
";"
strComputer = "LOCALHOST" ' Change as needed.
Set objWMIService = GetObject("WinMgmts:"_
&"{ImpersonationLevel=Impersonate}!\\" & strComputer _
&"\root\wmi")
Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SetBiosSetting")

For Each objItem in colItems
ObjItem.SetBiosSetting strRequest, strReturn
Next

WScript.Echo strRequest
WScript.Echo " SetBiosSetting: " + strReturn

If strReturn <> "Success" Then
WScript.Quit
End If

```

```

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SaveBiosSettings)

strReturn = "error"
For Each objItem in colItems
    ObjItem.SaveBiosSettings Wscript.Arguments(2)+";", strReturn
Next

WScript.Echo strRequest
WScript.Echo "    SaveBiosSettings: " + strReturn

```

On systems announced in 2017 or later:

```

'
' Set specific BIOS Setting on local system when Administrator
password exists
'

On Error Resume Next
Dim colItems

If WScript.Arguments.Count <> 3 Then
    WScript.Echo "SetConfigPassword.vbs [Item] [Value]
[Password]"
    WScript.Echo "Example:change Audio setting to Disabled when
pap is 123"
    WScript.Echo "SetConfigPassword.vbs ""Audio Support""
Disabled ""123"
    WScript.Quit
End If

strRequestItem = WScript.Arguments(0) + "," + WScript.Arguments(1)
+ ";"
strSecurityAdmin = "WmiOpcodePasswordAdmin:" +
WScript.Arguments(2) + ";"
strSave = ";"

strComputer = "LOCALHOST" ' Change as needed.
Set objWMIService = GetObject("WinMgmts:" _
& "{ImpersonationLevel=Impersonate}!\" & strComputer &
"\root\wmi")

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_WmiOpcodeInterface")

strReturn = "error"

For Each objItem in colItems
    ObjItem.WmiOpcodeInterface strSecurityAdmin, strReturn
Next

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SetBiosSetting")

For Each objItem in colItems
    ObjItem.SetBiosSetting strRequestItem, strReturn
Next

WScript.Echo strRequest
WScript.Echo " SetBiosSetting: " + strReturn

If strReturn <> "Success" Then
    WScript.Quit
End If

```

```

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SaveBiosSettings")

strReturn = "error"
For Each objItem in colItems
    ObjItem.SaveBiosSettings strSave, strReturn
Next

WScript.Echo strRequest
WScript.Echo " SaveBiosSettings: " + strReturn

```

List all BIOS settings on a remote computer

Use below sample scripts as templates to list all BIOS settings and values on a remote computer.

Syntax: cscript.exe ListAllRemote.vbs [Hostname]

Example: cscript.exe ListAllRemote.vbs mattdev-c5

```

,
' List all BIOS settings
,

On Error Resume Next
Dim colItems

If WScript.Arguments.Count <> 1 Then
    WScript.Echo "ListAllRemote.vbs [hostname]"
    WScript.Quit
End If

strComputer = WScript.Arguments(0)

Set objWMIService = GetObject("WinMgmts:" _
& "{ImpersonationLevel=Impersonate," _
& "authenticationLevel=pktPrivacy}!\\" _
& strComputer & "\root\wmi")
Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_BiosSetting")
For Each objItem in colItems
    If Len(objItem.CurrentSetting) > 0 Then
        Setting = ObjItem.CurrentSetting
        StrItem = Left(ObjItem.CurrentSetting, InStr(
ObjItem.CurrentSetting, ",")-1)
        StrValue = Mid(ObjItem.CurrentSetting, InStr(
ObjItem.CurrentSetting, ",")+1, 256)
        WScript.Echo StrItem + " = " + StrValue
    End If
Next

```

Set a single BIOS setting on a remote computer

Use the below sample scripts as templates to set a single BIOS setting on a remote computer.

Syntax: cscript.exe SetConfigRemote.vbs [Item] [Value]
[Hostname]

Example: cscript.exe SetConfigRemote.vbs "Wake Up on LAN"
Disabled mattdev-c5

If change boot order,

Example if change the primary Boot Sequence:

```
cscript.exe SetConfig.vbs "Primary Boot Sequence" "Network
1:SATA 1:USB HDD:SATA 2:USB CDROM:USB Key" mattdev-c5

,
' Set specific BIOS Setting
,

On Error Resume Next
Dim colItems
If WScript.Arguments.Count < > 3 Then
WScript.Echo "SetConfigRemote.vbs [setting] [value] [hostname]"
WScript.Quit
End If

strRequest = WScript.Arguments(0) + "," + WScript.Arguments(1) +
","
strComputer = WScript.Arguments(2)
Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate," _
&"authenticationLevel=pktPrivacy}!\" _
& strComputer & "\root\wmi")

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SetBiosSetting")
For Each objItem in colItems
ObjItem.SetBiosSetting strRequest, strReturn
Next

WScript.Echo strRequest
WScript.Echo " SetBiosSetting: " + strReturn

If strReturn <> "Success" Then
WScript.Quit
End If
Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SaveBiosSettings")

strReturn = "error"
For Each objItem in colItems
ObjItem.SaveBiosSettings ";", strReturn
Next

WScript.Echo strRequest
WScript.Echo " SaveBiosSettings: " + strReturn
```

Set a single BIOS setting on a remote computer when a Administrator password exists

Use the below sample scripts as templates to set a single BIOS setting on a remote computer.

On systems announced before 2017:

Syntax: cscript.exe SetConfigPasswordRemote.vbs [Item]
[Value] [Password+Encoding] [Hostname]

Example: cscript.exe SetConfigPasswordRemote.vbs "Wake Up on LAN" Disabled "pass,ascii,us" mattdev-c5

```
,
' Set specific BIOS Setting
```

```

',
On Error Resume Next
Dim colItems
If WScript.Arguments.Count <> 4 Then
WScript.Echo "SetConfigPasswordRemote.vbs [Item] [value]
[password+encoding] [hostname]"
WScript.Quit
End If

strRequest = WScript.Arguments(0) + "," + WScript.Arguments(1) +
","
strComputer = WScript.Arguments(3)
Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate," _
&"authenticationLevel=pktPrivacy}!\\" _
& strComputer & "\root\wmi")

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SetBiosSetting")
For Each objItem in colItems
ObjItem.SetBiosSetting strRequest, strReturn
Next

WScript.Echo strRequest
WScript.Echo " SetBiosSetting: " + strReturn

If strReturn <> "Success" Then
WScript.Quit
End If
Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SaveBiosSettings")

strReturn = "error"
For Each objItem in colItems
ObjItem.SaveBiosSettings Wscript.Arguments(2)+";", strReturn
Next

WScript.Echo strRequest
WScript.Echo " SaveBiosSettings: " + strReturn

```

On systems announced in 2017 or later:

```

',
' Set specific BIOS Setting on a remote computer when Administrator
password exists
',
On Error Resume Next
Dim colItems

If WScript.Arguments.Count <> 4 Then
WScript.Echo "SetConfigPasswordRemote.vbs [Item] [Value]
[Password] [hostname]"
WScript.Quit
End If

strRequestItem = WScript.Arguments(0) + "," + WScript.Arguments(1)
+ ","
strSecurityAdmin = "WmiOpcodePasswordAdmin:" +
WScript.Arguments(2) + ";"
strSave = ";"

strComputer = WScript.Arguments(3)

Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate," _
&"authenticationLevel=pktPrivacy}!\\" & strComputer & "\root\wmi")

Set colItems = objWMIService.ExecQuery("Select * from

```

```

Lenovo_WmiOpcodeInterface")

strReturn = "error"
ss
For Each objItem in colItems
    ObjItem.WmiOpcodeInterface strSecurityAdmin, strReturn
Next

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SetBiosSetting")

For Each objItem in colItems
    ObjItem.SetBiosSetting strRequestItem, strReturn
Next

WScript.Echo strRequest
WScript.Echo " SetBiosSetting: " + strReturn

If strReturn <> "Success" Then
    WScript.Quit
End If

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SaveBiosSettings")

strReturn = "error"
For Each objItem in colItems
    ObjItem.SaveBiosSettings strSave, strReturn
Next

WScript.Echo strRequest
WScript.Echo " SaveBiosSettings: " + strReturn

```

Set a Administrator password on the local computer when a Administrator password exists

Use the below sample scripts as templates to set a single BIOS setting on a remote computer.

Note: You cannot set a password if one does not already exist.

Changing passwords for systems announced before 2017

Syntax: cscript.exe SetAdminPassword.vbs [old password] [new password] [encoding]

Example: cscript.exe SetAdminPassword.vbs oldpass newpass "ascii,us"

```

,
' Update Administrator password
,

On Error Resume Next
Dim colItems
If WScript.Arguments.Count < > 3 Then
WScript.Echo "SetAdminPassword.vbs [oldpassword] [newpassword]
[encoding]"
WScript.Quit
End If

strRequest="pap,"+WScript.Arguments(0)+","+ WScript.Arguments(1)
+ ","+Wscript.Arguments(2)+";";"

```

```

strComputer = "LOCALHOST" 'change as needed
Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate," _
&"authenticationLevel=pktPrivacy}!\\" _
& strComputer & "\root\wmi")

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SetBiosPassword")
strReturn = "error"
For Each objItem in colItems
    ObjItem.SetBiosPassword strRequest, strReturn
Next

WScript.Echo strRequest
WScript.Echo "    SetBiosPassword: " + strReturn

```

Changing passwords for systems announced in 2017 or later:

```

' Update Administrator Password
'
On Error Resume Next
Dim colItems
If WScript.Arguments.Count <> 2 Then
    WScript.Echo "SetAdminPassword.vbs [oldpassword]
[newpassword]"
    WScript.Echo "Example:change password form 123 to 321"
    WScript.Echo "SetAdminPassword.vbs ""123""321"
    WScript.Quit
End If

strRequestType = "WmiOpcodePasswordType:pap;"
strRequestCurrent
= "WmiOpcodePasswordCurrent01:" + WScript.Arguments(0) + ";"
strRequestNew
= "WmiOpcodePasswordNew01:" + WScript.Arguments(1) + ";"
strRequestAdmin
= "WmiOpcodePasswordAdmin:" + WScript.Arguments(0) + ";"
strRequestUpdate = "WmiOpcodePasswordSetUpdate;"
strComputer = "LOCALHOST" ' Change as needed.

Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate}!\\" & strComputer &
"\root\wmi")
Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_WmiOpcodeInterface")

strReturn = "error"
For Each objItem in colItems
    ObjItem.WmiOpcodeInterface strRequestType, strReturn
Next

For Each objItem in colItems
    ObjItem.WmiOpcodeInterface strRequestAdmin, strReturn
Next

For Each objItem in colItems
    ObjItem.WmiOpcodeInterface strRequestCurrent, strReturn
Next

For Each objItem in colItems
    ObjItem.WmiOpcodeInterface strRequestNew, strReturn
Next

For Each objItem in colItems
    ObjItem.WmiOpcodeInterface strRequestUpdate, strReturn
Next

```

```
WScript.Echo strRequest
WScript.Echo " WmiOpcodePasswordSetUpdate: "+ strReturn
```

Set a Administrator password on a remote computer when a Administrator password exists

Use below sample scripts as templates to set a single BIOS setting on a remote computer.

Note: You cannot set a password if one does not already exist.

Changing passwords for systems announced before 2017

Syntax: cscript.exe SetAdminPasswordRemote.vbs [old password]
[new password] [encoding] [hostname]

Example: cscript.exe SetAdminPasswordRemote.vbs oldpass newpass
"ascii,us" mattdev-c5

```
,
' Update Administrator password
,
On Error Resume Next
Dim colItems
If WScript.Arguments.Count < > 4 Then
WScript.Echo "SetAdminPasswordRemote.vbs [oldpassword]
[newpassword] [encoding] [hostname]"
WScript.Quit
End If

strRequest="pap,"+WScript.Arguments(0)+"," + WScript.Arguments(1)
+ ","+WScript.Arguments(2)+","
strCompter = Wscript.Arguments(3) 'change as needed
Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate," _
&"authenticationLevel=pktPrivacy}!\\" _
& strComputer & "\root\wmi")

Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_SetBiosPassword")
strReturn = "error"
For Each objItem in colItems
ObjItem.SetBiosPassword strRequest, strReturn
Next

WScript.Echo strRequest
WScript.Echo " SetBiosPassword: " + strReturn
```

Changing passwords for systems announced in 2017 or later

Syntax: cscript.exe SetAdminPasswordRemote.vbs [old password]
[new password] [hostname]

Example: cscript.exe SetAdminPasswordRemote.vbs oldpass newpass
mattdev-c5

```
,
' Update Administrator Password
,
On Error Resume Next
```

```

Dim colItems
If WScript.Arguments.Count < > 3 Then
WScript.Echo "SetAdminPasswordRemote.vbs [oldpassword]
[newpassword] [hostname]"
WScript.Quit
End If

strRequestType = "WmiOpcodePasswordType:pap;"
strRequestCurrent
="WmiOpcodePasswordCurrent01:"+WScript.Arguments(0)+";"
strRequestNew
="WmiOpcodePasswordNew01:"+WScript.Arguments(1)+";"
strRequestUpdate = "WmiOpcodePasswordSetUpdate;"

strComputer = WScript.Arguments(2)

Set objWMIService = GetObject("WinMgmts:" _
&"{ImpersonationLevel=Impersonate}!\" & strComputer &
"\root\wmi")
Set colItems = objWMIService.ExecQuery("Select * from
Lenovo_WmiOpcodeInterface")

strReturn = "error"
For Each objItem in colItems
ObjItem.WmiOpcodeInterface strRequestType, strReturn
Next

For Each objItem in colItems
ObjItem.WmiOpcodeInterface strRequestCurrent, strReturn
Next

For Each objItem in colItems
ObjItem.WmiOpcodeInterface strRequestNew, strReturn
Next

For Each objItem in colItems
ObjItem.WmiOpcodeInterface strRequestUpdate, strReturn
Next

WScript.Echo strRequest
WScript.Echo " WmiOpcodePasswordSetUpdate: "+ strReturn

```

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