HP BIOS Configuration Utility (BCU)

User Guide

User input syntax key

Text that you must enter into a user interface is indicated by `fixed-width font`.

Table -1 Syntax and their descriptions

Item	Description
`Text without brackets or braces`	Items you must type exactly as shown
`<Text inside angle brackets>`	A placeholder for a value you must provide; omit the brackets
`[Text inside square brackets]`	Optional items; omit the brackets
`{Text inside braces}`	A set of items from which you must choose only one; omit the braces
`|`	A separator for items from which you must choose only one; omit the vertical bar
`...`	Items that can or must repeat; omit the ellipsis

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1   Getting started

What is HP BIOS Configuration Utility?

HP BIOS Configuration Utility (BCU) is a free utility that enables you to do the following:

- Read available BIOS settings and their values from a supported desktop, workstation, or notebook computer

- Set or reset Setup Password on a supported desktop, workstation, or notebook computer

- Replicate BIOS settings across multiple client computers

Download the latest version of BCU from http://www.hp.com/go/clientmanagement.

System requirements

Table 1-1 **Minimum hardware and software for clients**

Windows 7, Windows 8, Windows 8.1, Windows PE (version 4.0.1.1 or later), Windows 10.

> **NOTE:** BIOS setting management is supported under Windows PE 3.x, 4.0, or 5.0. See WMI support required on page 4.

> **NOTE:** Support of Windows XP and Windows Vista™ has been deprecated in BCU version 4.0.

Installation

Run the BCU SoftPaq to install its contents to the folder `<PROGAMFILESDIR>\HP\BIOS Configuration Utility\`, where `<PROGAMFILESDIR>` is the Program Files folder on the target system (For example, C:\PROGRAM FILES). The resulting files at the target folder include:

- **BIOSConfigUtility.exe**

- **BIOSConfigUtility64.exe**

- **HPQPswd.exe**

- **HPQPswd64.exe**

- **BCUsignature32.dll**

- **BCUsignature64.dll**

- Internet shortcut to **BIOS Configuration Utility User Guide.pdf**

2   Command-line parameters

Use the following syntax to run BCU:

`BIOSConfigUtility.exe <options>` —

or—

`BIOSConfigUtility64.exe <options>`

The valid options are:

Parameter	Description

`/Get:"filename"`
—or—
`/GetConfig:"filename"`
	Gets the configuration data.
	
	NOTE: If "filename" is empty, BCU writes configuration data to the output console.

`/Set:"filename"`
—or—
`/SetConfig:"filename"`
	Modifies the system BIOS configuration. Accepts only REPSET formatted files.

`/cspwdfile:"filename"`
—or—
`/CurSetupPasswordFile:"filename"`
—or—
`/cpwdfile:"filename"`
	Specifies the current BIOS Setup Password by providing an encrypted password file. Current password should be provided when changing BIOS settings or password. Can specify only one current password file. Use **HPQPswd.exe** to generate password file. See Password management on page 6 for additional details on this utility.
	
	NOTE: Requires BCU version 3.0.1.1 or later.
	
	If using a BCU version earlier than 4.0.1.1, use `/cspwdfile:"filename"`.

`/nspwdfile:"filename"`
—or—
`/NewSetupPasswordFile:"filename"`
—or—
`/npwdfile:"filename"`
	Specifies the new BIOS Setup Password by providing an encrypted password file. To remove the password, use `/npwdfile:""`. Use HPQPswd.exe to generate the password file. See Password management on page 6 for additional details on this utility.
	
	NOTE: Clearing the BIOS Setup Password will remove all BIOS Users.
	
	Requires BCU version 3.0.1.1 or later.
	
	If using a BCU version earlier than 4.0.1.1, use `/nspwdfile:"filename"`.

`/?`
—or—
`/Help`
	Displays a help message.

`/SetDefaults`	Sets BIOS settings to their default values. **NOTE:** `/SetDefaults` does not change every possible value; also, it does not change settings on an individual basis.
`/verbose`	When used with `/Set`, displays details about each setting, such as success, the reason for failure (warning), or failure code (error).
`/WarningAsErr`	When used with `/Set`, displays details about each setting. Unlike `/verbose`,

any settings not applied due to warnings cause BCU to return program error code 13 instead of success.

Chapter 2   Command-line parameters

Parameter	Description
	NOTE: Requires BCU 3.0.11.1 or later. When both `/verbose` and `/WarningAsErr` are used, `/WarningAsErr` will take precedence.
`/Unicode`	Checks platform support for Unicode passwords only. If not supported, returns error code 32. Use only in batch files; this command is not compatible with other commands.
	NOTE: Requires BCU version 4.0.1.1 or later.
`/log`	Generates the log folder and log file default to the executable folder.
	NOTE: Requires BCU version 4.0.1.1 or later.
`/getvalue`	Gets the value of a given setting without using the config file.
	Example: `BIOSConfigUtility.exe /getvalue:"Asset Tracking Number"`
	NOTE: Requires BCU version 4.0.1.1 or later.
`/setvalue`	Sets the value of a given setting without using the config file.
	Example: `BIOSConfigUtility.exe /setvalue:"Asset Tracking Number","12345678"`
	NOTE: Requires BCU version 4.0.1.1 or later.
`/ot:value`	When this value is set to 0, a setting will be rejected if the anti-replay value specified is less than what is stored by the firmware.
	When this value is set to 1 a setting will be rejected if the anti-reply value specified is less than or equal to what is stored by the firmware.
	Since BCU uses the same anti-replay value for all the settings made within a file, when it is used with a settings file containing multiple changes, this value must be set to 0 or only 1 setting will get applied.
`/ar:value`	Provides AntiReplay value. The firmware compares the anti-replay value used for each setting with an internal value (initially 0). If the value provided with the setting is less than (or equal based on the `/ot` setting) to what is stored then the setting is rejected. If the setting is accepted. the firmware updates its internal value with the value used by the setting. This logic is used to prevent older settings from being reused for security reasons. A common method of simplifying the management of this value is to use the `epoch / unix` time in UTC as the value. The current values stored by the BIOS are available in the BIOS settings:
`/uid:value`	Provides the MachineID Universally Unique Identifier (UUID) this is available in the BIOS setting "Universally Unique Identifier (UUID)" and can be used to target the setting to a single platform.
	Using a value of FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF allows the settings to be applied on any machine. The default value is FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF.

`/pkey:"*.pfx"`	Specifies the path /filename to the PFX file that contains the private key to use when signing the settings.
`/pkeypwd:value`	Optional. If the specified PFX file is password protected, this specifies the password to the PFX file
`/addauthstr`	Generates `BCU-AuthString.txt`. **NOTE:** Includes the unique signature strings required to change BIOS settings on a system with HP Sure Admin enabled.

3 BIOS configuration

BCU is a Windows-based tool that lets you create standard configuration settings and deploy them across the enterprise. By creating a configuration text file with only the setting you want to change, you can deploy it to all systems in the enterprise. If a particular system does not support the specified setting, it will be ignored.

WMI support required

BCU requires HP custom WMI namespace and WMI classes (at the namespace root\HP\InstrumentedBIOS) provided by BIOS. BCU will only support models with a WMI-compliant BIOS, which are most commercial HP desktops, notebooks, and workstations.

Before running BCU, it is helpful to make sure that the HP BIOS WMI classes are in the namespace root\HP \InstrumentedBIOS. When using BCU in WinPE, ensure that the WMI component is added to the boot image using Microsoft® Deployment Image Servicing and Management (DISM) tool.

Replicated setup

To create, save, and deploy the configuration settings, complete the following procedure:

1. Run the program **BIOSConfigUtility.exe** using the `/GetConfig:config.txt` command-line parameter.

2. Edit the file **config.txt**. Remove properties that you do not want to change and modify the other properties.

> **NOTE:** Some properties, such as model and manufacturer, are read-only. Such properties will be ignored with a warning if specified during `/SetConfig`.

> **NOTE:** If a property value has not changed in the input configuration file from its existing value in BIOS, it will be skipped during `/SetConfig`. It is recommended to remove such settings during `/SetConfig` operation.

> **NOTE:** If a property name or value is invalid or does not exist on the client system, such settings will be ignored with a warning during `/SetConfig`.

The following **config.txt** example shows a configuration file that changes some properties:

```
BIOSConfig 1.0

    ;

    ; Originally created by BIOS Configuration Utility

    ; Version 4.0.10.1 ; Date="2015-03-20"

    Time="14:37:40" UTC="-5"

    ;

    ; Found 214 settings

Asset Tracking Number

    CORPTAG001ABCDEF
```

```
        Removable Media Boot

            Enable

            *Disable Removable

        Media Write

            Enable

            *Disable

        Enter Ownership Tag property

            of company XYZ

        Boot Order

            Network Controller

            PnP Device#1

            Hard Drive (C:)

            CD-ROM Drive

            IDE CD-ROM Drive Multibay

            Device (A: or CD-ROM)

            Diskette Drive (A:)

            USB device

        Cover Lock

            Unlock

            *Lock
```

3. Run **BIOSConfigUtility.exe** with the `/SetConfig:config.txt` command-line parameter to apply the settings contained in **config.txt**.

Important notes

- The `/Set` and `/Get` functionality is supported on select commercial desktop, mobile, and workstation systems. Supported settings vary by model.

- In BCU version 4.0.1.1 and later, the first line of the configuration file must be the word "BIOSConfig," followed by the file format version, currently 1.0. For backwards compatibility, the word "English" is accepted. This keyword is deprecated and support may be removed in the future. For BCU versions earlier than 4.0.1.1, the first line must be the word "English." ● The settings are indented with a tab character.

  📝 **IMPORTANT:**   Indenting with space characters will not work.

- There is no space between `/command:` and the file name.

- Arguments containing spaces must be entered within quotes.

- For commands that contain two comma-separated arguments, there must not be a space before or after the comma.

- Only password changes are guaranteed to take effect immediately and without a reboot. All other settings might not take effect until after a reboot.

- The exact strings for some boot devices may vary between models. For example, the network controller for Boot Order was identified with the tag "PNP Device #1" on one system and "Network Controller" on newer systems. If your environment includes a mix of systems, then ensure that all known values for a particular boot device are placed together in the list relative to the next type of boot device. See the previous example. Devices not found on the system are ignored. See the previous example, noting that CD-ROM is specified several different ways.

- It is recommended that you do not mix replicated setup changes with software updates that include BIOS firmware updates. It is a best practice to perform each operation independently and to restart the system between each operation. This procedure accommodates cases in which the internal structure of BIOS configuration setting information changes between BIOS revisions.

Password management

BCU also has the ability to establish, modify, and remove the BIOS setup password. Use the HP Password Encryption Utility (HPQPswd.exe) to create the password file needed to specify new or current password. It is available at HP Client Management Solutions website at http://www.hp.com/go/clientmanagement. See HP Password Encryption Utility on page 18 for password utility usage samples.

Use the following sample command to create a setup password on a system with no existing password:

```
BIOSConfigUtility.exe /nspwdfile:"new password.bin"
```

Use the following sample command to modify the BIOS setup password use:

```
BIOSConfigUtility.exe /nspwdfile:"new password.bin" /cspwdfile:"current
password.bin"
```

Use the following sample command to remove the BIOS setup password use:

```
BIOSConfigUtility.exe /nspwdfile:"" /cspwdfile:"current password.bin"
```

> **NOTE:** A password change command can be combined with BIOS configuration, in which case the password is modified before the configuration is applied.

```
BIOSConfigUtility.exe /set:"configuration.txt" /nspwdfile:"new password.bin"
```

BCU with HP Sure Admin

HP Sure Admin enables BIOS Enhanced authentication mode (BEAM). This mode allows you to set up additional steps for authentication.

When a system has HP Sure Admin enabled, BIOS requires an authorization string in order to allow changes to BIOS settings rather than using a BIOS Admin Password. The authorization string contains the values specified by the /ot, /ar, and /uid command line options, as well as a cryptographic signature.

> **NOTE:** To Enable Enhanced BIOS Authentication Mode. Secure Platform Mode must be in the Provisioned state, and you must use a authorization string either using beamsetting.txt or /addauthstr to enable or disable.

There are three ways to change settings on a system that has HP Sure Admin enabled.

The following example shows you how to add an authorization string to a config file:

1. Run the following command: BIOSConfigUtility.exe /get:config. To create a copy of config.txt

2. Open `config.txt` and make any changes you want to the configuration. **3.** Run the following command:

   `BIOSConfigUtility.exe /set:<config>.txt /ar:0 / ot:0 /pkey:<signing_key>.pfx /addauthstr`

   > **NOTE:** This command creates a file called `BCU-Authstring.txt`.
   >
   > This depends on the anti-replay counter currently stored by the BIOS to be 0 and `/ot:0`.
   >
   > To run this command a second time, change the `/ar` parameter to a larger number.
   >
   > Refer to the definition of `/ar` for more details.

4. Run the following command: `BIOSConfigUtility.exe /set:BCU-AuthString.txt` **NOTE:** All

   > changes should now be applied.

The second method of making changes to a system with HP Sure Admin enabled is to use `beamsetting.txt`

1. Run the following command: `BIOSConfigUtility.exe /get:<config>.txt`

2. Open `<config>.txt`, and make any changes you want to the configuration.

3. Put a file called `beamsetting.txt` in the root folder with `BIOSConfigUtility.exe` that includes the following information:

   ● HP Beam Mode Setting

   ● AntiReplayValue=0

   ● OneTime=0

   ● TargetID=FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

   ● PrivateKey=<signing_key>.pfx

4. Run the following command: `BIOSConfigUtility.exe /set:<config>.txt`

   > **NOTE:** The TargetID field in `beamsetting.txt` is the Universally Unique Identifier (UUID) of the system. If you want the signature strings to only be valid for one system, you can enter the Universally Unique Identifier (UUID) in this field. To apply the config file to multiple systems, leave as FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF.

To apply settings directly from the command prompt without BCU-Authstring.txt or beamsetting.txt:

1. Run the following command: `BIOSConfigutility.exe /get:<config>.txt`

2. Open `<config>.txt`, and make any changes you want to the configuration. **3.** Run the following command:

   `BIOSConfigUtility.exe /set:<config>.txt /ar:0 / ot:0 /pkey:<signing_key>.pfx`

Comments

BCU configuration files support adding comments by using the ';' (semicolon) character. Any line that begins with';' is treated as a comment. The white space (including tab) in front of ';' is ignored. The comment does not carry over to the next line.

Example usage of comments:

```
BIOSConfig 1.0

; This file shows usage of comments in configuration files ; Below is an

example of comments using semicolon at beginning of line

Sunday

; *Disable

; Enable


; Below is an example of comments using semicolon after white space
(includes tab)

Monday

 ;*Disable

 ;Enable


; Below is an example where the semicolon is NOT considered as a comment.

Parallel Port

 IO=3BC; IRQ=7

 IO=378; NOT comment
```

A

Error codes

Error code	Description	Notes
0	Success	Operation succeeded.
1	Not Supported	WMI result code – Setting is not supported on system.
2	Unknown	WMI result code – Operation failed for unknown reason.
3	Timeout	WMI result code – Operation timed out.
4	Failed	WMI result code – Operation failed.

5	Invalid Parameter	WMI result code – A parameter is missing or wrong type.
6	Access Denied	WMI result code – Setting modification failed due to BIOS permissions.
10	Valid password not provided.	BCU was unable to find a valid password on the command-line in the following cases: • When attempting to change the password, the correct password was not provided. • When attempting to change the password, the new password did not satisfy password requirements for the platform. • When attempting to change setting values, the correct password was not provided.
11	Config file not valid.	BCU was unable to locate the configuration file or unable to read the file at the specified path.
12	First line in config file is not the keyword "BIOSConfig".	First line in the configuration file must be the word "BIOSConfig" followed by the file format version, currently "1.0".
13	Failed to change setting.	BCU failed to change one or more settings. Use `/verbose` or `/WarningAsErr` to get status per setting.
14	BCU not ready to write file.	Not used.
15	Command-line syntax error.	Possible reasons for this error include the following: • Invalid command-line option specified. Use `/?` or `/Help` for available options. • Invalid combination of command-line options used. • Multiple password files were specified. Only one new or current setup password file can be provided on command-line. • No configuration file name was specified with `/set`. • No file name was specified with `/cspwdfile` or `/nspwdfile`.
16	Unable to write to file or system.	BCU was unable to connect to HP BIOS WMI. WMI classes are corrupted or the system is not supported. See the section WMI support required on page 4 for additional information.
17	Help is invoked.	Show usage text.

Error code	Description	Notes
18	Setting is unchanged.	This return code is returned by BCU on a per setting basis when `/verbose` or `/WarningAsErr` options are specified. Settings with this return code are skipped when BCU attempts to write to BIOS and do not affect BCU return code.
19	Setting is read-only.	This return code is returned by BCU on a per setting basis when `/verbose` or `/WarningAsErr` options are specified. Settings with this return code are skipped when BCU attempts to write to BIOS. When `/verbose` is used, this return code generates a warning and does not affect the BCU return code. If `/WarningAsErr` is used, it results in BCU error code 13.
20	Invalid setting name.	This return code is returned by BCU on a per setting basis when `/verbose` or `/WarningAsErr` options are specified. Settings with this return code are skipped when BCU attempts to write to BIOS. When `/verbose` is used, this return code generates a warning and does not affect the BCU return code. If `/WarningAsErr` is used, it results in BCU error code 13.
21	Invalid setting value.	This return code is returned by BCU on a per setting basis when `/verbose` or `/WarningAsErr` options are specified. Settings with this return code are skipped when BCU attempts to write to BIOS. When `/verbose` is used, this return code generates a warning and does not affect the BCU return code. If `/WarningAsErr` is used, it results in BCU error code 13.
23	Unable to connect to HP BIOS WMI namespace.	System not supported. Unable to connect to HP BIOS WMI namespace: root\HP\InstrumentedBIOS. See the section WMI support required on page 4 for additional information.
24	Unable to connect to HP WMI namespace.	System not supported. Unable to connect to HP WMI namespace: root\HP. See the section WMI support required on page 4 for additional information.
25	Unable to connect to PUBLIC WMI namespace.	System not supported. Unable to connect to PUBLIC WMI namespace: root\CIMV2. Ensure that WMI service is enabled and running.
30	Password file error.	Unable to read or decrypt the password file.
31	Password is not F10 compatible.	If a platform does not support Unicode passwords, BCU can set and change the password, but the password will not function in F10 Setup. BCU must be used to change or clear it.
32	Platform does not support Unicode passwords.	Returned when the `/Unicode` option is used to check for support.
33	No settings to apply found in Config file.	Config file contains no settings or they are commented out.
35	Missing parameter.	BCU_OneTime_Not_Found.
36	Missing parameter.	BCU_AntiReplayValue_Not_Found.
37	Missing parameter.	BCU_PrivateKey_Not_Found.
38	Corrupt or missing file.	BCU_Unable_LoadDll_BCUsignature.

39	DLL file error.	BCU_Unable_GetClass_entry.
40	DLL file error.	BCU_Unable_GetClass_Point
41	Invalid UID.	Invalid Universal Unique Identifier.

Appendix A Error codes

Error code	Description	Notes
0x80040002	Unexpected WMI error.	PFX file does not contain a private key.
0x80070056	Unexpected WMI error.	PFX file is protected with a password and no or invalid password is provided
0x80092009	Unexpected WMI error.	Invalid PFX file
0x80070002	Unexpected WMI error.	The system cannot find the file specified

B   Sample configuration file

This configuration file shows a partial list of the BIOS settings for an HP ZBook 15:

```
BIOSConfig 1.0
; ; Originally created by BIOS Configuration Utility
; Version: 4.0.1.1 ; Date="2014-09-17" Time="09:39:33"
UTC="-5"
; ; Found 244 settings
;
Manufacturer
    Hewlett-Packard
Product Name
    HP ZBook 15
System Board ID
    1909
Universal Unique Identifier(UUID)
    7FAC190ABD17E411A132884C5F06E0FF
Processor Type
    Intel(R) Core(TM) i7-4900MQ CPU
SKU Number
    D5H49AV#ABA
Warranty Start Date
    00/00/0000
Processor Speed
    2.80GHz
Sunday
    *Disable
    Enable
Monday
*Disable
Enable
Tuesday
*Disable
```

```
        Enable

    Wednesday

        *Disable

        Enable

    Thursday

        *Disable

        Enable

    Friday

        *Disable

        Enable

    Saturday

        *Disable

        Enable BIOS Power-On Time (hh:mm)

        00:00

    PCID Version

        A3.00

    System Configuration ID

        A3008DD20303

    Define Custom URL


    Total Memory Size

        16384 MB

    Memory Slot 1 Information

        Top - Slot 2 (under) Hynix/Hyundai 4096 MB @ 1600 MHz

    Memory Slot 2 Information

        Bottom-Slot 2(right) Samsung 4096 MB @ 1600 MHz

    Memory Slot 3 Information

        Top - Slot 1 (top) Hynix/Hyundai 4096 MB @ 1600 MHz Memory Slot 4
        Information

        Bottom-Slot 1(left) Samsung 4096 MB @ 1600 MHz

    Define Customized Boot Option


    Enter Feature Byte

        3X47676J6S6b7M7Q7U7W7saBaw.BQ

    Enter Build ID
```

13WWAVCW601#SABA#DABA

BIOS Date

06/24/2014

System BIOS Version

L70 Ver. 01.10

Serial Number

CND3220CMX

Video BIOS Revision

Intel(R) GOP Driver [5.0.1028]

Video BIOS Revision 2 nVidia 05/15/14

Keyboard Controller Version

94.51

Ownership Tag

Asset Tracking Number

Primary Battery Serial Number

13577 5/4/2013

Serial port

*Disable

Enable

Thunderbolt port

DisplayPort only

PCIe and DisplayPort

*PCIe and DisplayPort - require user approval for Thunderbolt legacy
devices

Secondary Battery Serial Number

No Battery Present

Parallel port

*Disable

Enable

Flash media reader

Disable

*Enable

USB Port

```
        Disable

        *Enable

  Express Card Slot

        Disable

        *Enable

  Smart Card

        *Disable

        Enable

WWAN FCC ID

        No Device Present

WLAN FCC ID

        PD96235ANH

Bluetooth FCC ID

        PD96235ANH

System Board CT

        PXXXXA2WV4PYXW

Product Family

        103C_5336AN G=D L=BUS B=HP S=ELI eSATA Port

        Disable

        *Enable

GPS FCC ID

        No Device Present

MicroCode Revision

        16

Language

        *English

        Francais

        Deutsch

        Espanol

        Italiano

        Dansk

        Nederlands

        Suomi

        Japanese
```

Norsk

        Portugues

        Svenska

        Simplified Chinese

        Traditional Chinese

Custom Logo

        *Disable

        Enable CD-ROM boot

        *Disable

        Enable

Fast Boot

        Disable

        *Enable

Backlit Keyboard Timeout *5 secs.

        15 secs.

        30 secs.

        1 min.

        5 mins.

        Never

SD Card boot

        *Disable

        Enable Floppy boot

        *Disable

        Enable

PXE Internal NTC boot

        *Disable

        Enable

Legacy Boot Order mSATA Drive Notebook Upgrade Bay

        Notebook Hard Drive

        USB Floppy

        USB CD-ROM

        USB Hard Drive

        Notebook Ethernet Dock Upgrade Bay eSATA Drive Boot Device 13 ...

C   HP Password Encryption Utility

The HP Password Encryption Utility (HPQPswd.exe) accepts a password entered by the user, encrypts the password, and then stores it in a file for use by the BIOS. This utility can be used in either command-line mode or GUI mode. To run it in GUI mode, double-click the executable or run without parameters.

HP recommends using a strong password to protect managed assets.

The following is a sample command to create a password file in silent mode:

```
HpqPswd.exe /s /p"12345678" /f"sample password.bin"
```

In this example, `/p` specifies the password, and `/f` specifies the name and path of the encrypted file.

NOTE: Use the `/?` command to invoke help for additional information on the password utility.

HPQPswd.exe currently supports a maximum of 32 characters.

Appendix C   HP Password Encryption Utility