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AFU User Guide

Purpose

This document provides information to use the AFU (AMI Firmware Update) tools to update the system BIOS.

Application Scope

Inspur Whitley and Cedar Island platform Server.

Overview and Supported Operating System


AFU is a package of utilities used to update the system BIOS on various operating systems.

AFU is supported by the following operating systems:

~~Microsoft® Windows® 2000~~
~~Microsoft® Windows® XP~~
~~Microsoft® Windows® 2003~~
~~Microsoft® Windows® Server 2008 R2~~
 Microsoft® Windows® Server 2012 R2
 Microsoft® Windows® Server 2016
 Microsoft® Windows® Server 2019
~~Microsoft® Windows® Vista~~
 Microsoft® Windows® 7
 Microsoft® Windows® 8
 Microsoft® Windows® 8.1
 Microsoft® Windows® 10
 Microsoft® Windows® PE
 EFI Shell
 Linux

Note:

1. Linux notes: On the Linux Xen environment, AFULNX must be executed in host desktop (Domain 0) of the virtual machine.
2. Due to System IO access, Windows version requires administrator privileges and executes with "Run as Administrator" option.
3. Due to System IO access, Linux version requires root authority.

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Usage

To run, extract all of the files from the folder with the name corresponding to the desired operating system.

The following parts detail the AFU Tools' Usage EFI Shell, Linux and Windows operating system, AFUDOS is no longer supported since Purley platform due to DOS limitation on 16MB BIOS Images.

AfuEfix64

AfuEfix64.efi is used in UEFI Shell.

1. Start the System, and boot to UEFI Shell. When the screen shows prompt "Press to SETUP or <F11> to Boot Menu or <F12> to PXE Boot" (Different products may be slightly different). Press the DEL key to enter the Setup interface, select Add UEFI Shell To Boot Menu to Enabled under the Boot menu, then press F10 to save and restart
2. When the screen shows prompt "Press to SETUP or <F11> to Boot Menu or <F12> to PXE Boot" (Different products may be slightly different) at the bottom. Then press the F11 key to Boot Menu, select the "UEFI: Built-in EFI Shell" and press Enter. The Boot Menu example is shown in Figure 1.

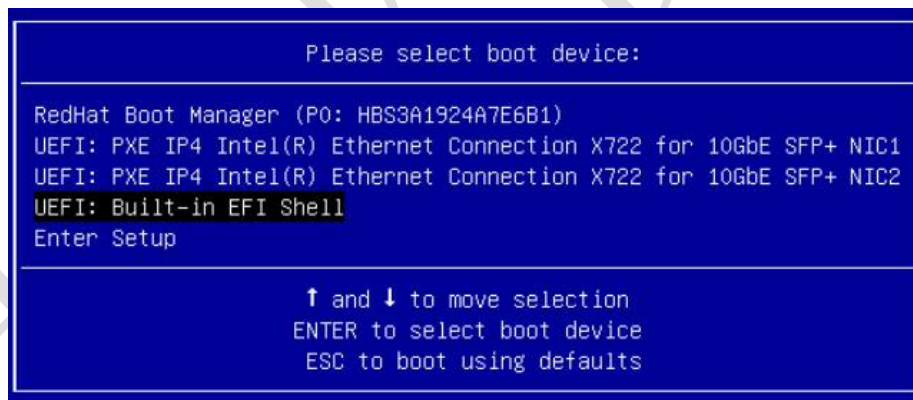


Figure 1

3. Move to AfuEfi64 directory, as shown in Figure 2.

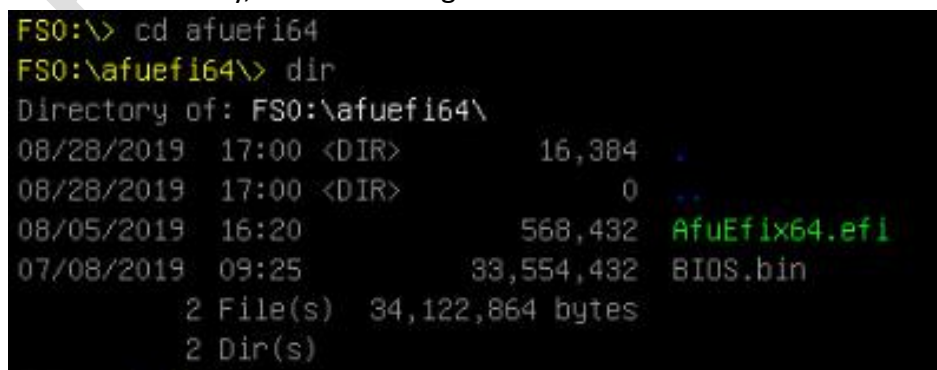



Figure 2

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4. The optional parameters are same to update BIOS with different AFU Tools. So if no ME update, execute the command shown below to update the BIOS part. The flashing process is shown in Figure 3.

Command: `AfuEfix64.efi BIOS.bin /b /p /n /x /k /l`

```

FS0:\afuefi64\> AfuEfix64.efi BIOS.bin /b /p /n /x /k /l
+-----+
|          AMI Firmware Update Utility v5.12.02.2028          |
| Copyright (c) 1985-2019, American Megatrends International LLC. |
| All rights reserved. Subject to AMI licensing agreement.      |
+-----+
Reading flash ..... done
- ME Data Size checking . ok
- Secure Flash enabled, recalculate ROM size with signature... Enable.
- FFS checksums ..... ok
- Check RomLayout ..... Changed.
WARNING !!
The ROM file information does not match with the system BIOS!
If forcedly update BIOS, it may destroy the System BIOS!
We strongly do not suggest to flash the BIOS!

Press "E"- This option will update entire ROM and exit.
Press "A"- This option will be no ROM update.
Press "F"- This option will be forcing to follow the command by user
provided.

- Please select one of the options:f
Loading capsule to secure memory buffer ... done
Erasing Boot Block ..... done
_Updating Boot Block ..... 0x00C20000 (4%)

```


Figure 3

Power off is suggested after the update completed, then restart the system.

AFU 5.09.02.1370 or later added a warning message for informing users to decide whether continue or not when ROM information is different at the beginning. Press "E"- This option will update entire ROM and exit. Press "A"- This option will be no ROM update. Press "F"- This option will be forcing to follow the command by user provided.

5. If ME Changed, execute the command shown below to update the BIOS and ME parts. The flashing process is shown in Figure 4. If containing PHY card, the PHY FW refresh must AC power off before it can take effect.

Command: `AfuEfix64.efi BIOS.bin /b /p /n /x /k /l /me`

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```
FS1:\afuefi64\> AfuEfix64.efi BIOS.bin /b /p /n /x /k /l /me
+-----+
|          AMI Firmware Update Utility v5.12.02.2028          |
| Copyright (c) 1985-2019, American Megatrends International LLC. |
| All rights reserved. Subject to AMI licensing agreement.      |
+-----+
Reading flash ..... done
- ME Data Size checking . ok
- Secure Flash enabled, recalculate ROM size with signature... Enable.
- FFS checksums ..... ok
- Check RomLayout ..... ok.
Loading capsule to secure memory buffer ... done
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... done
Updating Main Block ..... done
Verifying Main Block ..... done
Erasing NVRAM Block ..... done
Updating NVRAM Block ..... 0x00074000 (38%)
```

Figure 4

Options:

- /b Program Boot Block
- /p Program main bios image
- /n Program NVRAM
- /x Do not check ROM ID
- /k Program all non-critical blocks
- /l Program all ROM Holes
- /me Program ME Entire Firmware Block.

afuInx_64

1. Copy AfuInx64 package to Linux system.
2. Move to the AfuInx64 directory, as shown in Figure 5. BIOS.bin is the image file to be updated.


```
[root@cl ~]# cd afuInx64/
[root@cl afuInx64]# ls
afuInx_64  BIOS.bin
```

Figure 5

3. If no ME update, execute the command shown below to update the BIOS part. The flashing process is shown in figure 6.

Command: `./afuInx_64 BIOS.bin /b /p /n /x /k /l`

```
[root@localhost afuInx]# ./afuInx_64 BIOS.bin /b /p /n /x /k /l
```

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```

+-----+
|          AMI Firmware Update Utility v5.12.02.2028          |
| Copyright (c) 1985-2019, American Megatrends International LLC. |
| All rights reserved. Subject to AMI licensing agreement.      |
+-----+
Reading flash ..... done
- ME Data Size checking . ok
- Secure Flash enabled, recalculate ROM size with signature... Enable.
- FFS checksums ..... ok
- Check RomLayout ..... ok.
Loading capsule to secure memory buffer ... done
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... done
Updating Main Block ..... done
Verifying Main Block ..... done
Erasing NVRAM Block ..... done
Updating NVRAM Block ..... done

```

Figure 6

Power off is suggested after the update completed, then restart the system.

4. If ME Changed, execute the command shown below to update the BIOS and ME parts. The flashing process is shown in Figure 7. If containing PHY card, the PHY FW refresh must AC power off before it can take effect.


Command: `./afuInx_64 BIOS.bin /b /p /n /x /k /l /me`

```

[root@localhost afuInx]# ./afuInx_64 BIOS.bin /b /p /n /x /k /l /me
+-----+
|          AMI Firmware Update Utility v5.12.02.2028          |
| Copyright (c) 1985-2019, American Megatrends International LLC. |
| All rights reserved. Subject to AMI licensing agreement.      |
+-----+
Reading flash ..... done
- ME Data Size checking . ok
- Secure Flash enabled, recalculate ROM size with signature... Enable.
- FFS checksums ..... ok
- Check RomLayout ..... ok.
Loading capsule to secure memory buffer ... done
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... done
Updating Main Block ..... done
Verifying Main Block ..... done
Erasing NVRAM Block ..... done
Updating NVRAM Block ..... done
Verifying NVRAM Block ..... done
Erasing MCB Block ..... done
Updating MCB Block ..... done
Verifying MCB Block ..... done
Erasing RomHole Block ..... done
Updating RomHole Block ..... done
Verifying RomHole Block ..... done
- Upload the ME image data to BIOS ME module..... done
- Update success for FDR
- Update success for GBER
- Update success for DER
- Update success for GBEA

```

Figure 7

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AFUWINx64

1. Copy AfuWin64 package to Windows 64bit operating system, and take Windows 2016 R2 for example.
2. Open a command prompt and change directory to AfuWin64, as shown in Figure 8.

```
C:\Users\Administrator\Desktop\afuwin>dir
Volume in drive C has no label.
Volume Serial Number is 1692-3F49

Directory of C:\Users\Administrator\Desktop\afuwin

06/07/2017  12:34 PM    <DIR>          .
06/07/2017  12:34 PM    <DIR>          ..
01/12/2017  07:26 PM             796,784 AFUWINGUI.EXE
01/12/2017  07:41 PM             577,648 AFUWINx64.EXE
01/10/2017  05:53 PM              17,896 amifldr64.sys
04/13/2017  09:33 AM          33,554,432 BIOS.bin
01/13/2017  04:26 PM              4,918 readme.txt
               5 File(s)          34,951,678 bytes
               2 Dir(s)  258,974,142,464 bytes free
```

Figure 8

3. If no ME update, execute the command shown below to update the BIOS part.
Command: AFUWINx64.EXE BIOS.bin /b /p /n /x /k /l
Power off is suggested after the update completed, then restart the system.
4. If ME Changed, execute the command shown below to update the BIOS and ME parts. The upgrade process is similar to process in Dos and Linux, so no figure is provided here. If containing PHY card, the PHY FW refresh must AC power off before it can take effect.
Command: AFUWINx64.EXE BIOS.bin /b /p /n /x /k /l /me