



**AMDVBFLASH  
User Guide**

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## Revision History

<b>Date</b>	<b>Revision</b>	<b>Changes</b>
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## OVERVIEW

- AMDVbFlash is a console mode utility for AMD GPU device in a diagnostics environment providing ability to flash the VBIOS.
- AMDVbFlash utility supports erasing and programming video VBIOS on multiple platforms, including
  - Windows 64 bit
  - Linux

## SET UP

### Tool Execution Step

- **Windows (Windows 64 bit)**
  - Install the amdvbflash installer package
    - This will internally install the required tools driver required to run the tool.
  - From the windows command prompt, go to the installed folder.
    - Tool will be installed under “C:\Program Files\AMD\AMDVbFlash” or
  - Run “amdvbflash.exe” with suitable command line arguments as required.
- **Linux**
  - Unzip the tar.gz file to any folder.
  - Run “./amdvbflash” with suitable command line arguments as required.

## COMMAND LINE OPTIONS

### version Command

- Run amdvbflash –version command to fetch the tool version

```
root@ub180404dk64:~/aniket/AMDVbFlash_updated/v5.0.305/official# ./amdvbflash --version
AMD VBIOS Flasher Tool Version 5.0.305.0. Copyright© 2020-2022 Advanced Micro Devices, Inc. All rights reserved.
```

## Help Command

➤ Run `amdvbflash` (or `amdvbflash -h`, `amdvbflash --help`, `amdvbflash -?`) command to display the help

```

Command line switches for the flash capability:
-s [ --save ] arg      This flag instructs the tool to save the VBIOS
                       image. This has to be used along-with the
                       --device switch and the --vbios-info. If
                       --vbios-file is not specified then the file
                       name is constructed at run time with the
                       following format [ASIC]_[BDF]_[Index].rom
-p [ --flash ] arg    Write VBIOS image in file <file> to flash ROM
                       in ASIC <Num>.
                       Usage:
                       -p <Num> <File>, or
                       --flash --device [Num] --vbios-file <File>
--vbios-info          This flag when used along with --show flag
                       instructs the tool to show the VBIOS
                       Information from the file specified by using
                       the --vbios-file option
--vbios-file arg      Specify the VBIOS file to work with. This
                       option can be used to save the VBIOS image to
                       this file as well as to read VBIOS image from
                       this file
--bios-file-info arg  Display the BIOS info in the given file
--savefile-at-end     This flag instructs the tool to save the whole
                       VBIOS content read from the ROM Controller at
                       the end of read operation. This should always
                       be used only with --save flag. If not used, by
                       default the tool keeps writing ROM contents
                       read in each iteration to the file.
--save-flashed-bytes This flag instructs the tool to save the bytes
                       being flashed to the SPIROM to a file for
                       debugging purpose. This will enable the user to
                       additionally verify what and how many bytes have
                       been written to the SPIROM at the end of flash
                       operation. This flag should always be used with
                       --flash command only. If not used, by default
                       the bytes won't be additionally saved to a
                       file.
--fa                  This flag enables force flashing the same IFWI
                       version. Should be used with the --flash
                       switch.
                       Usage:
                       -p <Num> <File> -fa, or
                       --flash --device [Num] --vbios-file <File>
                       --fa
--fp                  This flag instructs the tool to bypass BIOS
                       part number check and perform a force flash.

```

```

part number check and perform a force flash.
This flag should always be used with --flash
command only.
Usage:
  -p <Num> <File> -fp, or
  --flash --device [Num] --vbios-file <File>
  --fp
--fv
This flag enables downgrading the IFWI by
performing a force flash. This bypasses
checking the VBIOS/IFWI version. This flag
should always be used with --flash command.
Usage:
  -p <Num> <File> -fv, or
  --flash --device [Num] --vbios-file <File>
  --fv
--checkpn arg
Compare Part Number of the current IFWI in the
device with the Part Number in the IFWI image
specified.
Usage:
  --/-checkpn <Num> <File>, or
  --/-checkpn --device <DeviceIndex>
  --vbios-file <IFWI Image>
--cr arg
Calculates the 16-bit ROM checksum for device
<Index> of size if size is specified and
compare with sum if expected sum is specified.
Usage:
  -cr <Num> <size> <sum>, or
  --cr --device [Num] <size> <sum>
--complete
This flag instructs the tool to calculate
checksum of Complete IFWI. This flag should be
used with --cr/--cf command only.
Usage:
  -cr <Num> <size> <sum> -complete, or
  --cr --device [Num] <size> <sum> --complete
--biosimage
This flag instructs the tool to calculate
checksum of VBIOS image in IFWI. This flag
should be used with --cr command only.
Usage:
  -cr <Num> <size> <sum> -biosimage, or
  --cr --device [Num] <size> <sum>
  --biosimage
--cf arg
Calculate 16-bit checksum for file <File> and
if expected checksum has been specified then
compare the calculated checksum with the
specified checksum.

```

## Display Information Command (-i)

- Display all AMD graphic cards information detected on the system
- General graphic cards information

COMMAND:

**amdvbflash -i <Num>**

**amdvbflash --show --device <Num>**

Display information of all the AMD adapter on the system or for specific adapter <Num> if specified.

```
root@ub180404dk64:~/aniket/AMDVBFlash_updated/v5.0.305/official# ./amdvbflash -i
SNo BDF          DID ASIC      SPIROM      Size Test BIOS P/N
-----
0 0000:03:00.0 73f0 Navi33      GD25Q16E    0x200000 Pass 113-D7460101
1 0000:06:00.0 73f0 Navi33      GD25Q16E    0x200000 Pass 113-D7460101
```

```
root@ub180404dk64:~/aniket/AMDVBFlash_updated/v5.0.305/official# ./amdvbflash -i 1
SNo BDF          DID ASIC      SPIROM      Size Test BIOS P/N
-----
1 0000:06:00.0 73f0 Navi33      GD25Q16E    0x200000 Pass 113-D7460101
```

## Display Information Command (-ai)

- Advanced graphic cards information
- Displays other details like Product name, Config file, Version, date and time information along with all UEFI GOP Driver image information

COMMAND:

**amdvbflash -ai <Num>**

**amdvbflash --show --advanced --device <Num>**

Display advanced information of all the AMD adapter on the system or for specific adapter <Num> if specified.



```
root@ub180404dk64:~/aniket/AMDVBFlash_updated/v5.0.305/official# ./amdvbflash -ai 0
```

```
Adapter 0 (0x0000:03:00.0)
```

```
ASIC Family      Navi33
Flash Type       GD25Q16E
Product Name     D746_XT_A0_8GB_Bringup_NAVI33_Test_00479.sbin
Bios Config File NAVI33.bin
Bios P/N         113-D7460101
Bios Version     022.003.000.047.000001
Bios Date        03/29/22 11:51:32
```

```
Image 0 -- Offset 0x0000
```

```
ROM header contents:
```

```
Signature        0xaa55
PCIR Offset      0x03ac
```

```
PCI Data Structure:
```

```
Signature        PCIR
Vendor ID        0x1002
Device ID        0x73f0
PCI Revision     0x0
Image Size       0x3400
Code Revision    0x1603
Indicator        0x0      (Not Last Image)
Code Type        0x0      (Intel IA-32, PC-AT compatible)
Legacy BIOS File Name  NAVI33.bin
Legacy BIOS Part Number  113-D7460101
Legacy BIOS Build Number 00009903
Legacy BIOS Change List 0000
Binary BIOS Identifier (IDTF) 0x80d4b29e
```

```
Image 1 -- Offset 0x3400
```

```
Signature        0xaa55
PCIR Offset      0x001c
```

```
PCI Data Structure:
```

```
Signature        PCIR
Vendor ID        0x1002
Device ID        0x73f0
PCI Revision     0x0
Image Size       0xae00
Code Revision    0x0000
Indicator        0x0      (Last Image)
Code Type        0x0      (EFI)
Image Size       0x0000ef1
Compression Type 0x0      (Compressed)
MachineType      0x8664   (X64 Machine Type)
Subsystem        0x0b     (EFI Boot Service Driver)
```

```

EFI Image Offset          0x5c      (abs: 0x4345c)
UEFI IDs from EFI_PCI_EXPANSION_ROM_HEADER
UEFI Source Revision     GOP_AMD REV: 000.000.000.022.003
UEFI Source Change List  0000
UEFI BIOS Build Number   9903
GOP Driver Info:
Machine Type Code        0x8664   (AMD64 (K8))
Authenticode Signed      false
GOP Image Size           0x13460  (77KB)
Driver Name              AMD GOP X64 Rel Driver Rev.3.3.4.Feb 24 2022.23:00:30
UEFI Major Revision      0x0
UEFI Minor Revision      0x0
UEFI Fix Revision        0x0
Legacy Major Version     0x0
Legacy Minor Version     0x0
GOP AMD Build
GOP AMD CL
GOP BIOS Identifier (IDTF) 0xdeadbeef
Driver Carries legacy tables false

```

## Save VBIOS Command

- Save the VBIOS image from the ROM to a specified file.

COMMAND:

**amdvbflash -s <Num> <File>**

**amdvbflash --save --device <Num> --vbios-file <File>**

Read the VBIOS image into file <File> to save the ROM contents in Adapter <Num>

```

root@ub180404dk64:~/aniket/AMDVBFflash_updated/v5.0.305/official# ./amdvbflash -s 0 D746101.sbin
VBIOS Image of Size: 0x200000 Saved.

```

## Program VBIOS Command

- Program VBIOS image into the ROM
- Flash VBIOS at specific graphic card

COMMAND:

**amdvbflash -p <Num> <File>**

**amdvbflash --flash --device <Num> --vbios-file <File>**

Write VBIOS image in file <File> to flash ROM in Adapter <Num>

```
root@ub180404dk64:~/aniket/AMDVBFflash_updated/v5.0.305/official# ./amdvbflash -p 0 D746_XT_A0_8GB_Bringup_NAVI33_Test_00479.sbin
Existing VBIOS version:      022.003.000.047.000001
VBIOS version To be flashed: 022.003.000.047.000001
-----
Existing VBIOS part number:  113-D7460101
VBIOS part number To be flashed: 113-D7460101
-----
Existing VBIOS SSID:         0xE41
SSID To be flashed:         0xE41
-----
Flashed: 0x200000 Bytes Successfully.
Please REBOOT the System to Complete VBIOS Update.
```

## Get VBIOS File information Command

- Fetch detailed bios file information for the IFWI file provided by user

COMMAND:

**amdvbflash --bios-file-info <File>**

```
root@ub180404dk64:~/aniket/AMDVBFflash_updated/v5.0.305/official# ./amdvbflash --bios-file-info D746101.sbin
Product Name      D746_XT_A0_8GB_Bringup_NAVI33_Test_00479.sbin
Bios Config File  NAVI33.bin
Bios P/N         113-D7460101
Bios Version     022.003.000.047.000001
Bios Date       03/29/22 11:51:32

Image 0 -- Offset 0x0000
-----
ROM header contents:
Signature         0xaa55
PCIR Offset      0x03ac
PCI Data Structure:
Signature         PCI
Vendor ID        0x1002
Device ID        0x73f0
PCI Revision     0x0
Image Size       0x3400
Code Revision    0x1603
Indicator        0x0      (Not Last Image)
Code Type        0x0      (Intel IA-32, PC-AT compatible)
Legacy BIOS File Name  NAVI33.bin
Legacy BIOS Part Number 113-D7460101
Legacy BIOS Build Number 00009903
Legacy BIOS Change List 0000
Binary BIOS Identifier (IDTF) 0x80d4b29e

Image 1 -- Offset 0x3400
-----
Signature         0xaa55
PCIR Offset      0x001c
PCI Data Structure:
Signature         PCIR
Vendor ID        0x1002
Device ID        0x73f0
PCI Revision     0x0
Image Size       0xae00
Code Revision    0x0000
Indicator        0x0      (Last Image)
Code Type        0x0      (EFI)
Image Size       0x0000ef1
Compression Type 0x0      (Compressed)
MachineType      0x8664   (X64 Machine Type)
Subsystem        0x0b    (EFI Boot Service Driver)
EFI Image Offset 0x5c    (abs: 0x4345c)
```

```
UEFI IDs from EFI_PCI_EXPANSION_ROM_HEADER
UEFI Source Revision      GOP AMD REV: 000.000.000.022.003
UEFI Source Change List   0000
UEFI BIOS Build Number    9903
GOP Driver Info:
Machine Type Code         0x8664 (AMD64 (K8))
Authenticode Signed       false
GOP Image Size            0x13460 (77KB)
Driver Name               AMD GOP X64 Rel Driver Rev.3.3.4.Feb 24 2022.23:00:30
UEFI Major Revision       0x0
UEFI Minor Revision       0x0
UEFI Fix Revision         0x0
Legacy Major Version      0x0
Legacy Minor Version      0x0
GOP AMD Build
GOP AMD CL
GOP BIOS Identifier (IDTF) 0xdeadbeef
Driver Carries legacy tables false
```

## Compare Checksum Command

- Compare the VBIOS image and ROM content checksum

### COMMAND:

#### **amdvbflash -cf <File> [Sum]**

Calculate 16-bit checksum for <File>. Checksum for the file is compared to [Sum] which is the expected checksum.

#### **amdvbflash -cr <Num> [Size] [Sum]**

Calculate 16-bit ROM checksum for adapter <Num> and compare it to the [Sum] specified. This command is the same as -cb if [Size] is specified.