Aptio ChangeLogo 5.03 User Guide

Aptio ChangeLogo Version 5.03

Document Revision 1.05
September 15, 2016

Confidential, NDA Required
Copyright © 2016

American Megatrends, Inc.
5555 Oakbrook Parkway
Suite 200
Norcross, GA 30093 (USA)

All Rights Reserved
Property of American Megatrends, Inc.

Legal

Disclaimer

This publication contains proprietary information which is protected by copyright. No part of this publication may be reproduced, transcribed, stored in a retrieval system, translated into any language or computer language, or transmitted in any form whatsoever without the prior written consent of the publisher, American Megatrends, Inc. American Megatrends, Inc. retains the right to update, change, modify this publication at any time, without notice.

For Additional Information

Call American Megatrends, Inc. at 1-800-828-9264 for additional information.

Limitations of Liability

In no event shall American Megatrends be held liable for any loss, expenses, or damages of any kind whatsoever, whether direct, indirect, incidental, or consequential, arising from the design or use of this product or the support materials provided with the product.

Limited Warranty

No warranties are made, either expressed or implied, with regard to the contents of this work, its merchantability, or fitness for a particular use. American Megatrends assumes no responsibility for errors and omissions or for the uses made of the material contained herein or reader decisions based on such use.

Trademark and Copyright Acknowledgments

Copyright © 2016 American Megatrends, Inc. All Rights Reserved.

American Megatrends, Inc.
5555 Oakbrook Parkway
Suite 200
Norcross, GA 30093 (USA)

All product names used in this publication are for identification purposes only and are trademarks of their respective companies.

Table of Contents

Document Information **4**
Purpose 4
Audience 4
Change History 4
Introduction **5**
Overview 5
Features 5
This list of features is supported **5**
Requirements 6
Supported Operation System *6*
Supported Logo File Formats *6*
Firmware Requirements *7*
Getting Started **9**
Installation 9
Command Line Operation **10**
Overview 10
Command Syntax *10*
Multi-Platform Command Syntax *11*
Exit Codes *13*
Secure Flash Capsule **15**
Overview 15
Multiple Splash Logos **16**
Overview 16
Command Line Interface for multiple logos *16*
Multi-Platform Command Syntax *18*
Additional Features **20**
Logo Size and Type Check 20

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

Document Information

Purpose

This document is intended to provide all the necessary information regarding usage of AMI ChangeLogo Tool.

Audience

The intended audiences are BIOS developers, Generic Chipset Porting Engineers, OEM Porting Engineers, and AMI OEM Customers.

Change History

Date	Revision History	Description
6/6/2016	1.00	Initial release
6/13/2016	1.01	Add ARM 64 Linux
7/12/2016	1.02	Updated for changelogo uefi release
7/25/2016	1.03	Updated for removal and addition of certain exit codes.
8/11/2016	1.04	Updated for adding Notes regarding error codes.
9/15/2016	1.05	Updated for removing common logo wraning message if no /p switch mentioned with replace operations

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

Overview

AMI ChangeLogo Tool allows you to replace the logo inside the APTIO Firmware file or Capsule file with a new one.

Features

This list of features is supported.

- Extract a Splash Logo
- Replace a Splash Logo
- Extract a Small Logo
- Replace a Small Logo
- Modifies the F/w Image without requiring rebuild.
- Support Capsule files
- Supports LZMA
- Single executable
- Operation from command line
- Insert Logo
- Delete Logo
- Multiple Splash Logos
- BIOS logo display capability check
- Additional splash logos stored in freeform subtype GUID sections
- JPEG compatibility checking
- PNG image support
- Supports APTIO V
- Block execution on non Aptio V ROM images
- Support for BIOS with FIT.
- Support to update unsigned area without invalidating signature.
- Support to verify logo change.
- Support Multi-Platform ROM image.
- Support PEI/DXE Modules
- Compatible with AMI debugger
- Prohibit saving AMI secure capsule files
- Save AMI Capsule file as ROM
- Optimize Size support

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

- Support for Compress and Decompress file.
- JPEG compatibility checking
- Check logos for TSE compatibility
- BIOS logo display capability check
- Save BIOS file using AptioV build tools to build image
- ARM Support
- Support images with top-down volume allocation
- Support more than 256 files/volume
- Automatic expansion of nested volumes

Requirements

Supported Operation System

The Change Logo Tool is supported by the following operating systems:

- Microsoft® Windows® 2000
- Microsoft® Windows® XP
- Microsoft® Windows® 2003
- Microsoft® Windows® Vista
- Microsoft® Windows® 7
- Microsoft® Windows® 8
- Microsoft® Windows® 8.1
- Microsoft® Windows® Server 2008 R2
- Microsoft® Windows® Server 2012 R2
- Linux
- UEFI

Supported Logo File Formats

AMI ChangeLogo tool supports BMP, JPG, PCX and GIF file formats. However, in this tool BMP is considered as the default format, and the BIOS must be configured at build time by setting the respective SDL tokens for enabling support for formats other than BMP. There are no color depth restrictions for this image. The image cannot be a Run-length encoding (RLE) encoded bitmap or compressed bitmap. Compression here refers to image compression as defined by the BMP format, not EFI compression.

The Change Logo Tool supports the following image formats outlined below,

- BMP files
- JPEG files
- GIF files

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

- PCX files
- PNG files

BMP

- Supports 16 color, 256 color and 24bit Color BMPs

JPEG

- Restart intervals supported
- The X-density/Y-density should be 1:1.
- It doesn't support "Progressive encoding".
- It only supports YUV112 (color component sampling 1:1:2).

A list of allowed and disallowed JPEG marker types may be found in the “Aptio ChangeLogo Specification” document.

PCX

- Supports only 2 versions, version 5 (Only 256 & 16 colors) and version 2
- PCX images with palette information only supported

GIF

- 24 bit color
- Animated GIF supported.

PNG

- 8 bit grayscale
- 8 bit indexed color
- 8 bit RGB color
- 16 bit RGB color

For “splash” logos, the image is designed to fit into a specified area of the screen. The dimensions of the image file should be set accordingly to fit in that desired area. To leave room for POST information, the “small” logo should be no larger than 400 by 100 pixels.

Firmware Requirements

The Change Logo utility requires that the input file be an APTIO firmware file or Capsule file with Logo module already present.

The Firmware file can be loaded into your host system from the hard disk drive.

It is compatible with APTIO V.

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

Other Prerequisites

For UEFI version, python support is needed. Install python to EFI folder in file system root.

Installation

ChangeLogo doesn't require to run any installer. Copy the ChangeLogo executable into the preferred location on hard drive and run the executable from command window.

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

Overview

ChangeLogo application operates in command line mode. The below commands are supported:

Command Syntax

Note: Replace the 'ChangeLogo' command with one of the executable names listed below based on platform.

Windows 32-bit: ChangeLogoWin32

Windows 64-bit: ChangeLogoWin64

Linux 64-bit: ChangeLogoLnx64

Linux AARCH64 ChangeLogoLnxAarch64

UEFI 64 bit: ChangeLogoEfi64.efi

1. Logo Extraction

   The extraction operation has the following syntax:

   ```
   ChangeLogo /i <firmware file> /e [<logo file>] [/s] [/f]
   ```

   Where /s indicates the "small" logo. If /s is not given, then the splash logo is extracted. The program will generate a file extension appropriate for the logo graphic image type (bmp, gif, jpg, or pcx). If no logo file name is given then the program uses base names "smlogo" or "splash". If the "/f" option is supplied the program will write over any existing logo file, otherwise it will issue an error message.

2. Logo Replacement

   The replacement operation has the following syntax:

   ```
   ChangeLogo /i <input firmware file> /o <output firmware file>/r <logo file> [/s] [/f] [/temp <TempDrive>]
   ```

   If the current and replacement files have different graphic image types then the program will issue an error message and terminate. This restriction may be over-ridden by using the "/f" (force) option. In this case, a warning message is issued. If the firmware volume does not have room for the replacement logo, ChangeLogo will issue an error message.

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

The “/f” option also controls whether or not the program will write over an existing file. The compression type of the replaced logo is preserved.

If the logo FFS file contains a section of type EFI_SECTION_USER_INTERFACE, then the new logo file name is updated in that section.

[/temp <TempDrive>] /temp option is for providing temporary disk drive as the input to generate build input files for rebuilding image.

3. Logo Deletion

   Logos may be deleted from an image using the "/d" option:

```
ChangeLogo /i <input firmware file> /o <output firmware file> /d [/s] [/f] [/temp <TempDrive>]
```

4. Logo Addition

   A logo may be added in cases where the logo is absent or previously deleted.

```
ChangeLogo /i <input firmware file> /o <output firmware file> /a <logofile> [/s] [/f] [/temp <TempDrive>]
```

   If the logo is already present it is considered an error and you must use the replace operation instead. Firmware volumes are tested until a volume with sufficient room is found. If the volume already contains a logo of a different kind (splash or small) then that volume is selected first. The boot block is not considered for logo insertion. Logos are always compressed using the Tiano method.

5. Test for Fit

   A replacement logo file may be tested against an image to see if it will fit:

```
ChangeLogo /i <firmware file> /t <logo file> [/temp <TempDrive>]
```

   If the image will not fit, the program will issue an error message.

6. Report Logo Image Types

```
ChangeLogo /i <firmware file> /l
```

7. Help

   Any of '/?' or invalid parameters will issue a usage message.

Multi-Platform Command Syntax

1. Logo Extraction

   The extraction operation has the following syntax:

```
ChangeLogo /i <firmware file> /e [<logo file>] [/p
<platform name>] [/s] [/f]
```

Where /p indicates platform name. If /p is not mentioned then it looks for logo shared among all the platforms.

2. Logo Replacement

   The replacement operation has the following syntax:

```
ChangeLogo /i <input firmware file> /o <output firmware
file> /r <logo file> [/p <platform name>] [/s] [/f] [/temp
<TempDrive>]
```

   Where /p indicates platform name. If /p is not mentioned then it tries to replace the logo shared among all the platforms.

   [/temp <TempDrive>] /temp option is for providing temporary disk drive as the input to generate build input files for rebuilding image.

3. Logo Deletion

   Logos may be deleted from an image using the "/d" option:

```
ChangeLogo /i <input firmware file> /o <output firmware
file> /d [/p <platform name>] [/s] [/f] [/temp <TempDrive>]
```

   Where /p indicates platform name. If /p is not mentioned then it tries to delete the logo shared among all the platforms. The user will be notified with the message *"Logo is shared between platforms. Change will be applied to all platforms."* when deleting a logo that is shared among platforms.

4. Logo Addition

   A logo may be added in cases where the logo is absent or previously deleted.

```
ChangeLogo /i <input firmware file> /o <output firmware
file> /a <logofile> [/p <platform name>] [/s] [/f] [/temp
<TempDrive>]
```

   Where /p indicates platform name. When the platform is specified, the tool will try to insert the logo specific to the particular platform. If the platform specific volume is not found, then it will try to insert the logo common to all platforms. In this case, user will be notified with the message *"Platform specific volume not found. Logo inserted common to all platforms."*. When the platform is not specified, the tool will try to insert the logo common to all platforms.

5. Test for Fit

   A replacement logo file may be tested against an image to see if it will fit:

```
ChangeLogo /i <firmware file> /t <logo file> [/p <platform
name>] [/temp <TempDrive>]
```

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

If the image will not fit, the program will issue an error message. Where /p indicates platform name. It checks fit operation for logo present for that particular platform. If /p is not mentioned, then it checks fit operation for logo shared among all the platforms.

6. Report Logo Image Types

   a) Logos shared among all platforms.

```
ChangeLogo /i <firmware file> /l
```

   b) Logos for all platforms.

```
ChangeLogo /i <firmware file> /l /all
```

   c) Logos for a particular platform.

```
ChangeLogo /i <firmware file> /l /p <platform name>
```

Note: '/all' option shouldn't be given along with '/p' option.

Exit Codes

In command line mode, the program returns error exit codes:

Error	Error Codes	Descriptions
EXIT_SYNTAX	1	Command line syntax error
EXIT_IMAGE_SAVE_ERROR	2	Image save error
EXIT_LOGO_NOT_FOUND	4	Logo(s) not found in image
EXIT_IMAGE_LOAD	5	Failed to load image
EXIT_IMAGE_TYPES	6	Replacement image type different
EXIT_REPLACE_ERROR	7	Replacement operation failed
EXIT_NO_LOGO_FILE	8	Logo file does not exist
EXIT_WRITE_PROTECT	9	Logo file or image is write-protected
EXIT_FILE_EXISTS	10	File would be over written
EXIT_LOGO_EXISTS	13	Insertion would replace existing logo
EXIT_ADD_ERROR	14	Add logo failed
EXIT_OTHER	15	Unclassified error

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

Error	Error Codes	Descriptions
EXIT_UNSUPPORTED_SIZE	16	Logo size exceeds BIOS limits
EXIT_UNSUPPORTED_TYPE	17	Logo type not supported by BIOS
EXIT_INCORRECT_PLATFORM_NAME	18	Platform name is incorrect in CMD for multi-platform supported rom image.
EXIT_INVALID_ARGUMENT	19	Invalid argument in command
EXIT_CREATE_LOGO_ERROR	24	Error in creating new logo
EXIT_TEST_FIT_FAILED	25	Test fit failed
EXIT_UNSUPPORTED_JPEG	26	Jpeg logo contains unsupported data type
EXIT_UNSUPPORTED_PNG	27	Png logo contains unsupported data type
EXIT_LOGO_EXTRACT_ERROR	29	Extract operation failed

Note: For exit code EXIT_SYNTAX, UEFI version will return 0x15 as exit status. Since the UEFI shell is having different meaning for Exit code 1.

In UEFI Shell Exit codes will be displayed in Hexadecimal.

Overview

The secure flash capsule (or AMI secure ROM file) contains logos in firmware volume nested inside special firmware files with fixed sizes and locations. These areas are exempt from the signature hash generation so may be updated by ChangeLogo after signing. If the logos are stored elsewhere, the program will not show them.

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

Overview

The use of multiple splash logos makes it possible to select a splash logo at boot time.

Command Line Interface for multiple logos

8. Extract logo from multiple logos

```
ChangeLogo /i <firmware file> /e [<logo file>] /m<number> [/f]
```

The program will generate a file extension appropriate for the logo graphic image type (bmp, gif, jpg, or pcx). If no logo file name is given then the program uses base "splash". Without the "/f" option the program will refuse to write over an existing file.

Here “/m” denotes for multi-logo, where the user can specify the number for which the application will operate on. For example, the parameter “/m2” causes the application to extract the logo from the second FFS found which has EFI_SECTION_FREEFORM_SUBTYPE_GUID section with the GUID matching that of the file GUIDs used now.

9. Replace a logo from multiple logos

```
ChangeLogo /i <input firmware file> /o <output firmware file> /r <logo file> /m<number> [/f] [/temp <TempDrive>]
```

If the current and replacement files have different graphic image types then the program will issue an error message and terminate. This restriction may be over-ridden by using the "/f" (force) option. If the firmware volume does not have room for the replacement logo, ChangeLogo will issue an error message. Without the "/f" option the program will refuse to write over an existing file.

Here “/m” denotes for multi-logo, where the user can specify the number for which the application will operate on. For example, the parameter “/m2” causes the application to replace the logo from the second FFS found which has EFI_SECTION_FREEFORM_SUBTYPE_GUID section with the GUID matching that of the file GUIDs used now

If the logo FFS file contains a section of type EFI_SECTION_USER_INTERFACE, then the new logo file name is updated in that section.

[/temp <TempDrive>] /temp option is for providing temporary disk drive as the input to generate build input files for rebuilding image.

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required

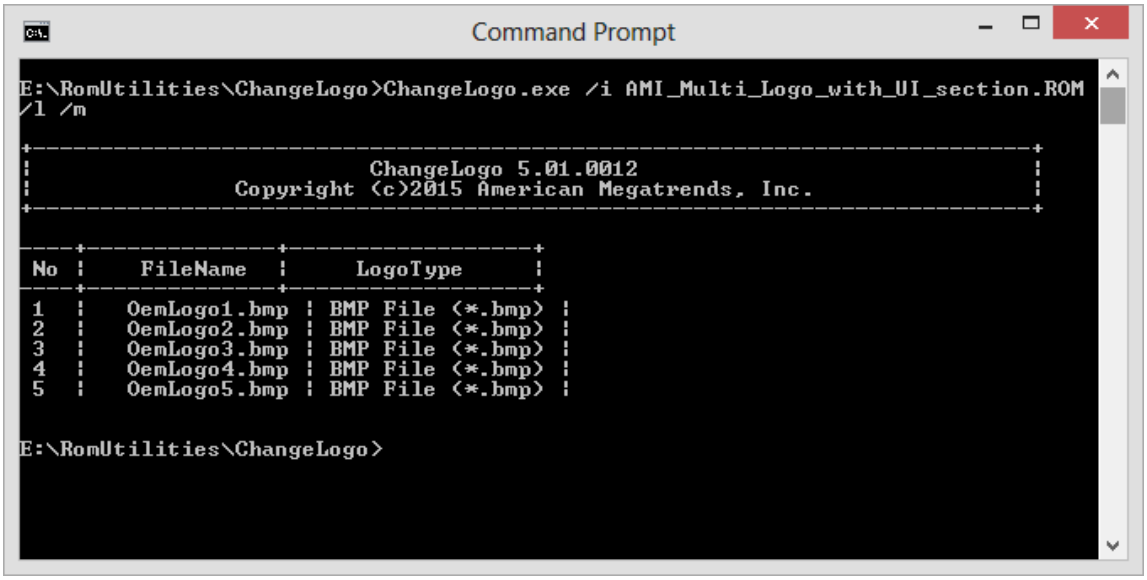
10. Report a logo type for multiple logos

```
ChangeLogo /i <input firmware file> /l /m
```

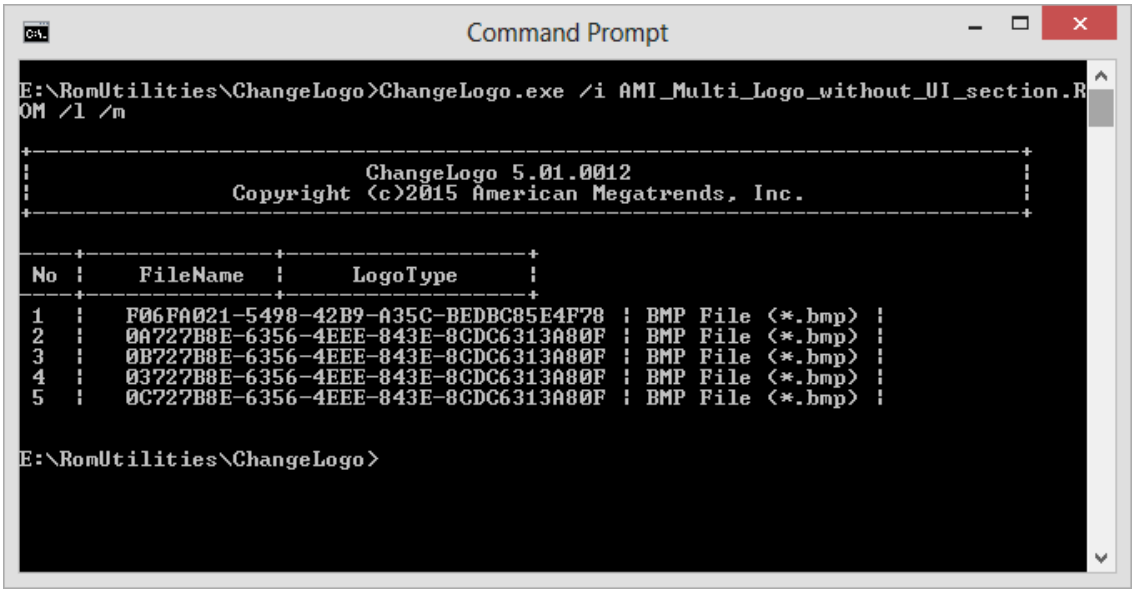
This command will report the list of logos available in the ROM image with the logo type. Since for multi-logo support only splash logo will be available, the command will display all the splash logos that are stored in an EFI_SECTION_FREEFORM_SUBTYPE_GUID section with the GUID matching that of the file GUIDs used now along with the logo type.

The sample screen shot is shown below:

When the logo FFS file contains the logo file name,



When the logo FFS file does not contain the logo filename,



Multi-Platform Command Syntax

11. Extract logo from multiple logos

```
ChangeLogo /i <firmware file> /e [<logo file>] /m <number>
[/f] [/p <platform name>]
```

Where /p indicates platform name. If /p is not mentioned then it looks for logo shared among all the platforms.

12. Replace a logo from multiple logos

```
ChangeLogo /i <input firmware file> /o <output firmware
file> /r <logo file> /m <number> [/f] [/p <platform name>]
[/temp <TempDrive>]
```

Where /p indicates platform name. If /p is not mentioned then it tries to replace the logo shared among all the platforms.

[/temp <TempDrive>] /temp option is for providing temporary disk drive as the input to generate build input files for rebuilding image.

13. Report logo type for multiple logos

a) Logos shared among all platforms

```
ChangeLogo /i <firmware file> /l /m
```

b) Logos for all platforms.

```
ChangeLogo /i <firmware file> /l /m /all
```

c) Logos for specific platform

```
ChangeLogo /i <firmware file> /l /m /p <platform name>
```

Note: '/all' option shouldn't be given along with '/p' option.

Logo Size and Type Check

ChangeLogo always gives a warning if the user changes the logo type. In addition, if the BIOS image contains a logo capability table it can give a warning if the type or dimensions of a replacement logo are not supported by the BIOS. The command line will give an error message and exit with an error code. If the '/f' option is present it will accept the logo but still issue a warning message.

Copyright © 2016 American Megatrends Inc. ● Confidential, NDA Required