

congatec Application Note

Affected Products	All congatec x86 products
Subject	How to create and add an OEM Boot and POST Logo
Confidential/Public	Public
Author	CJR

Revision History

Revision	Date (yyyy-mm-dd)	Author	Changes
1.0	2006-12-04	OAL	Initial release
1.1	2006-12-29	HCH+RCH	Reworked AMI and Insyde sections
1.2	2011-08-12	WST	Added UEFI information
1.3	2014-07-23	CJR	Minor updates. Removed all references to saving a BIOS from flash to file and using this file to update other modules.
1.4	2016-11-07	GMA	Updated to new layout, updated section 1 and 2, added section 3
1.5	2023-12-23	BAR	Updated to new layout, fixed command in step 3, section 2.3

Preface

This application note is intended to demonstrate how an OEM BIOS Boot Logo and OEM POST Logo can be created and added to a congatec embedded BIOS using the congatec System Utility (CGUTIL).

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Symbols

The following are symbols used in this application note.



Notes call attention to important information that should be observed.



Cautions warn the user about how to prevent damage to hardware or loss of data.



Warnings indicate that personal injury can occur if the information is not observed.

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Terminology

Term	Description
BIOS	Basic Input Output System.
UEFI	Unified Extensible Firmware Interface
POST	Power-on Self Test. A diagnostic testing sequence run by a computer's BIOS when the computer's power is initially turned on.
CGUTIL	congatec System Utility. Universal tool for BIOS updates and BIOS modifications.
CGOS	congatec Operating System API. Software driver for the congatec Embedded Features.

1 Introduction

congatec embedded BIOSes offer the 'Quiet Boot' or 'Splash Screen' function for systems that require that the BIOS POST messages not be displayed during the boot process. If enabled in the BIOS Setup, the BIOS POST messages are covered by a black boot logo. This default boot logo, that is included in all congatec BIOSes, can be replaced by a customized boot logo called an OEM Boot Logo.

It is not possible to insert an image (JPEG or BMP file) directly into the BIOS. The image must first be converted to a 'BIOS Boot Logo' module.

The following sections will demonstrate examples of how to create and insert this OEM 'BIOS Boot Logo' module within the BIOS using the congatec System Utility (CGUTIL). The CGUTIL is compatible for all congatec x86 CPU modules and single board computers and available as a Windows GUI (CGUTLGUI.exe) and DOS command line (CGUTLCMD.exe) utility.

1.1 Requirements

For detailed information about the congatec System Utility consult the CGUTIL User's Guide. This Guide can be found on the congatec web page.

The congatec System Utility requires a CGOS API driver that can also be found on the congatec web page in the 'Cgos.zip' file at www.congatec.com. This driver is only necessary if the Windows GUI version of CGUTIL is used.

The below information is for all newer congatec products featuring UEFI firmware. For older products running on Legacy BIOS please contact your local congatec support.

2 Create and Add an OEM BIOS Boot Logo

The following example shows how an OEM BIOS Boot Logo module can be created and added to the BIOS when working directly on a congatec module or single board computer.

In this example, the BIOS in the flash memory chip of the congatec CPU module or single board computer is modified directly. Another possibility is to download the current congatec standard BIOS and work in "BIN File" mode using a development PC.

2.1 'BIOS Boot Logo' Requirements

congatec's embedded BIOS supports .jpg, .gif and .bmp images for OEM boot logos. It is recommended to use a .jpg image with the same resolution as the native resolution of the used display device. Especially when using LVDS flat panels.

BMP logos are supported as 16 color, 256 color and 24bit color BMP images. Monochrome images and 32bit color with compression type 0 is also supported.

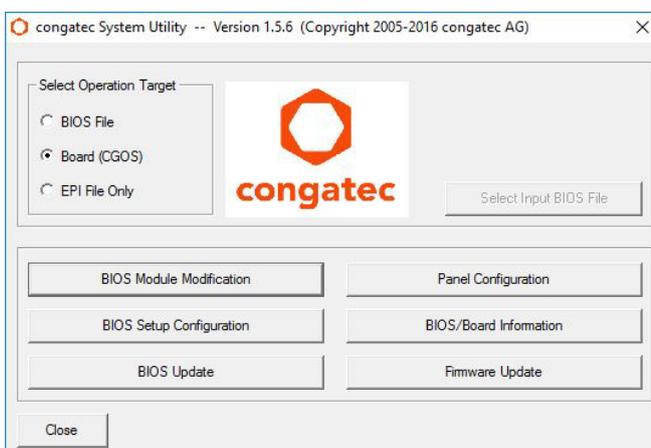
GIF logos must be 24bit color and can even be animated.

JPEG images supported are YUV122 and YUV111 color component sampling and the X-density/Y-density should be 1:1.

Note that not all JPEG formats and markers are supported. Contact your local congatec support in case your JPEG image is not working.

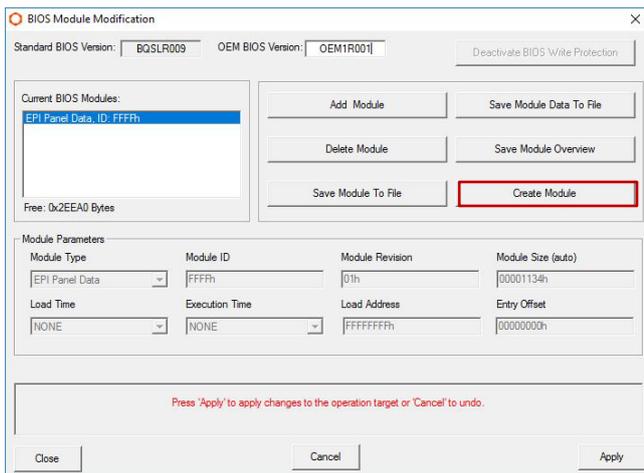
2.2 Using the Windows GUI version of CGUTL

The method described below is useful for evaluating and testing the OEM customization feature offered by the congatec system utility. Working on the target system allows for an immediate check of the BIOS changes. Another possibility is to work in 'BIN File' mode using a host PC. Whenever a new OEM BIOS Binary file should be created, use 'BIN File' mode instead of 'Board (CGOS)' mode.

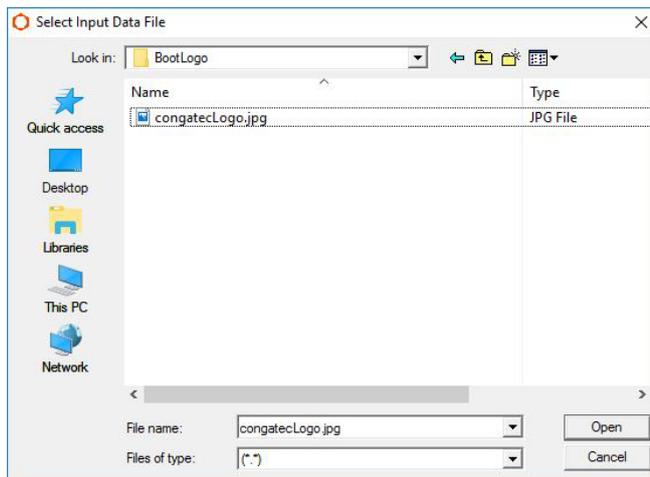


- Open the "congatec System Utility."
- Select "Board (CGOS)" as operation target.
- Push the button "BIOS Module Modification"

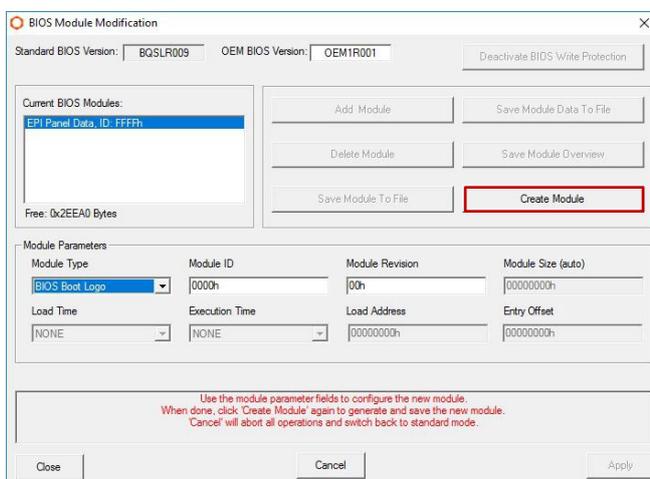
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- Click on the “Create Module” button.



- Browse for your boot logo file (in this example “congatecLogo.jpg”).

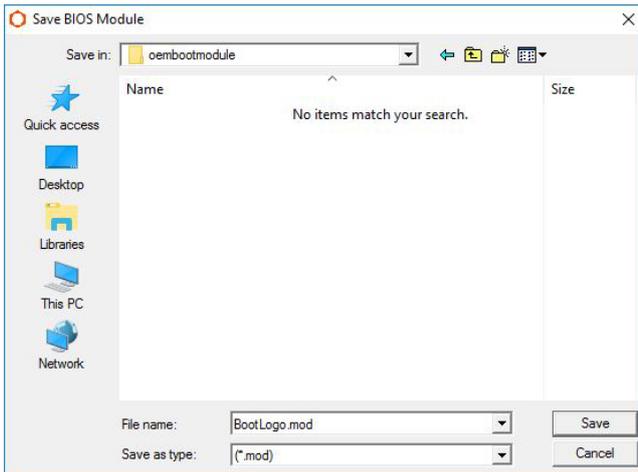


- Choose “BIOS Boot Logo” from the “Module Type” drop down list.

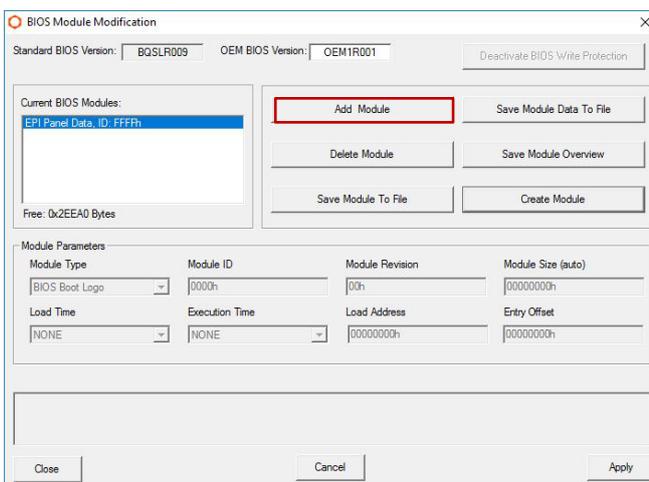
- Leave the Module ID and Module Revision field unchanged.

- Once this is completed, click on “Create Module” button.

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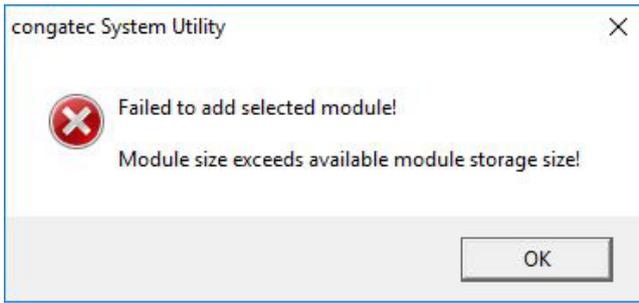
- Chose your designated module file name (in this example "BootLogo.mod").



- Click on "Add Module" button.



- Chose your designated module file name (in this example "BootLogo.mod").

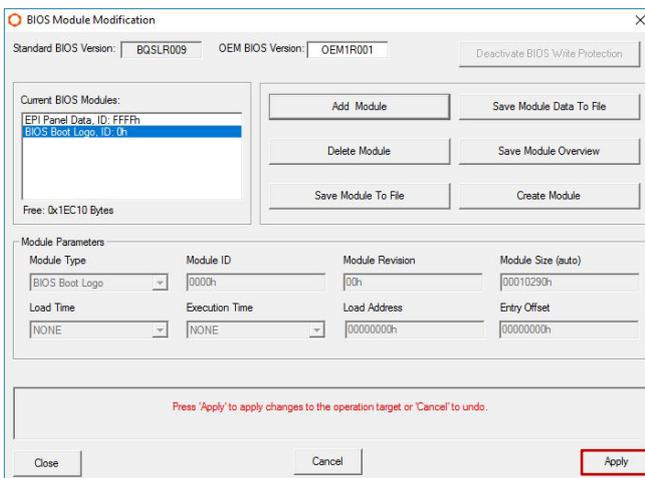


- The following error message will appear on the screen if the module size exceeds the available module storage size in the BIOS.

- Delete the previously created BootLogo.mod module.

- Choose a jpg file with a smaller size.

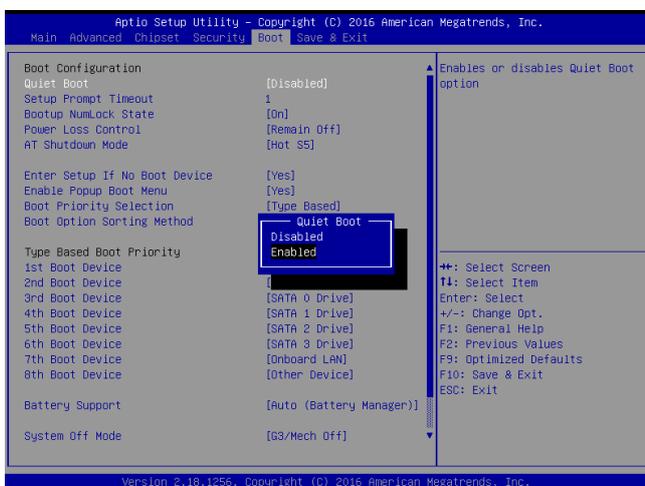
- Repeat the steps on how to create a module and add the new smaller BootLogo.mod module.



- The designated BIOS Boot Logo module must be visible in the list of modules.

- Click on "Apply" to save the changes into the onboard BIOS of the congatec CPU module or single board computer.

- "Changes successfully applied" will be displayed in red letters in the text box above the "Apply" button.



- To display the OEM BIOS Boot Logo during POST you have to launch the BIOS setup (press the key during the boot process) and change the 'Quiet Boot' setting in the Boot menu to [Enabled]. Save and exit the BIOS setup program. The system will reboot and the OEM BIOS Boot logo will be displayed. Since today's computers boot quite quickly the logo will be shown for only a short period of time.

2.3 Using the CGUTLCMD tool

The method described here is helpful for updating the congatec BIOS on the production line using the command lines from steps 4 and 5 in a simple DOS batch script. All example names used in the steps below may be changed. Only the DOS naming convention of an 8 character name and 3 character extensions, separated by a dot, must be adhered to.

1. After you've booted DOS on the congatec product, store the JPEG file (in our example "oemLogo.jpg") in the same folder where the congatec System Utility (CGUTLCMD.exe) is stored.
2. The JPEG file can only be inserted into the congatec BIOS after it has been converted to a 'BIOS Boot Logo' module. To do this, switch to the folder where the 'CGUTLCMD.exe' tool and JPEG file are stored and enter the command line:

```
cgutlcmd module /ot:board /create /if:oemLogo.jpg /of:BootLogo.mod /T:6
```
3. Now the created 'BIOS Boot Logo' module can be inserted into the BIOS. Enter the command line:

```
cgutlcmd module /ot:board /add /if:BootLogo.mod
```
4. Give your customized BIOS an explicit designator with a revision number to allow revision tracking (in our example the 'OEM BIOS Version' is 'OEM1R001'). The 'OEM BIOS Version' will be displayed during the BIOS POST and in the BIOS Setup program.

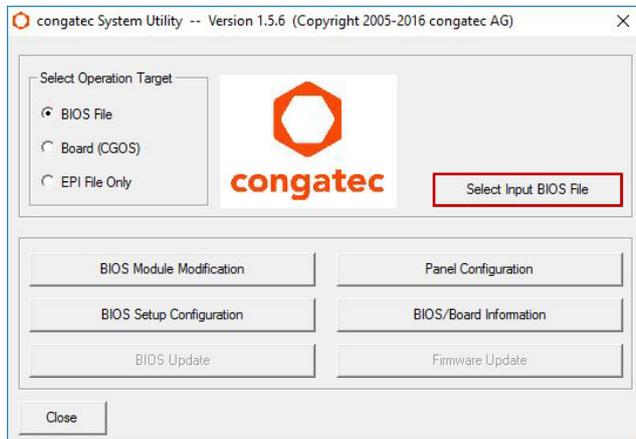
```
cgutlcmd module /ot:board /OEM:OEM1R001
```
5. To display the OEM 'BIOS Boot Logo' during POST, you have to enter the system BIOS again and change the 'Quiet Boot' setting to [Enabled] in the 'Boot Settings Configuration' menu (see also the last step of the previous section). Save and exit the BIOS setup program. The system will reboot and the OEM 'BIOS Boot Logo' will be displayed.

 **Note**

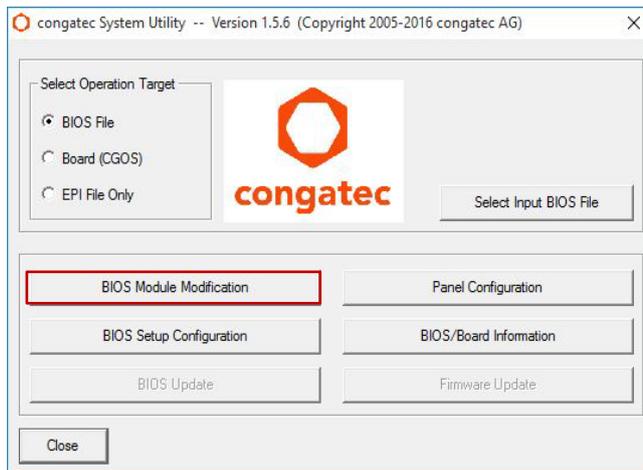
The same scripting can also be done in the UEFI shell using the UEFI version of CGUTIL.

3 Create and Add an OEM POST Logo

The method below describes how to create and insert a POST Logo into a BIOS Binary file by using the congatec System Utility. Whenever a new OEM BIOS Binary file should be created, use "BIN File" mode instead of 'Board (CGOS)' mode. Another possibility is to work in "Board (CGOS)" and working on the target system.

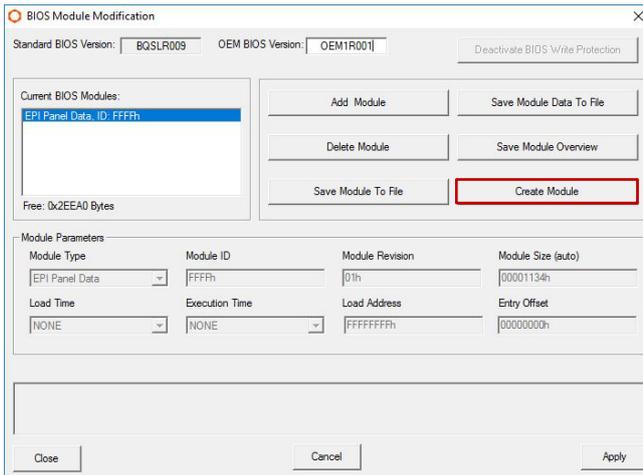


- Open the "congatec System Utility."
- Select "BIOS File" as operation target.- Push the button "Select Input BIOS File."- Select the BIOS to be used as base for the OEM BIOS.
- CGUTIL then prompts you for the file name of the new BIOS you are going to create. Name the BIOS OEM1R001.BIN for this example

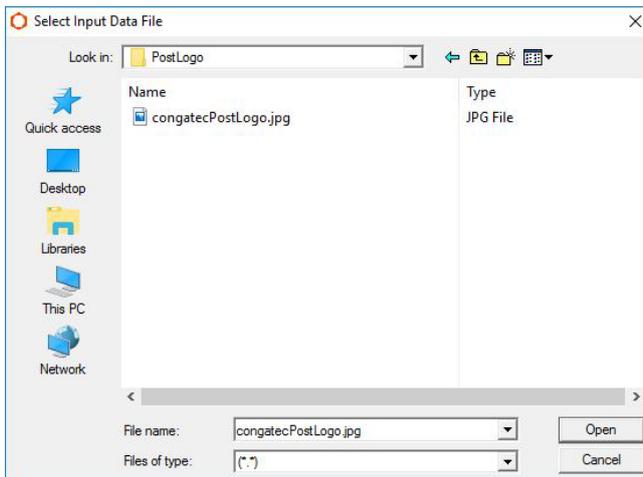


- Click on the "BIOS Module Modification" button.

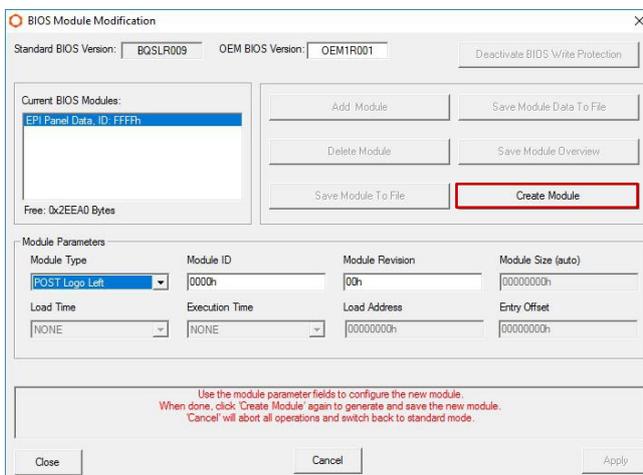
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- Click on the “Create Module” button.



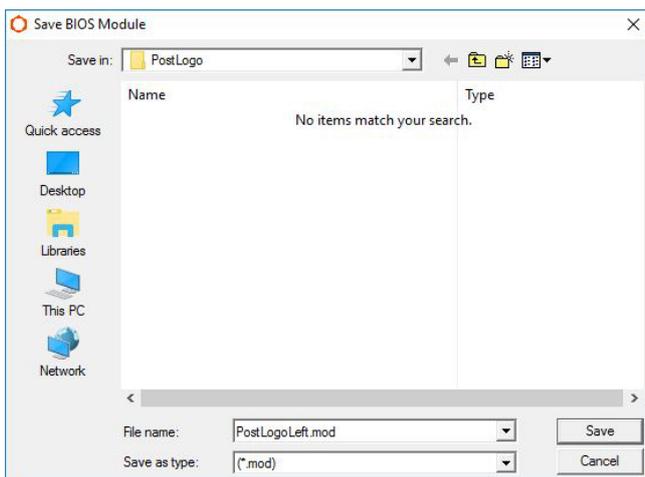
- Browse for your POST logo file (in this example “congatecPostLogo.jpg”).



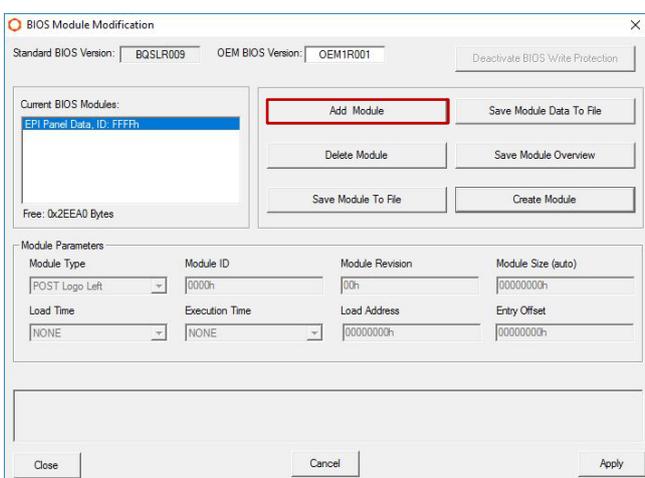
- Choose “POST Logo Left” from the “Module Type” drop down list.

- Leave the Module ID and Module Revision field unchanged.

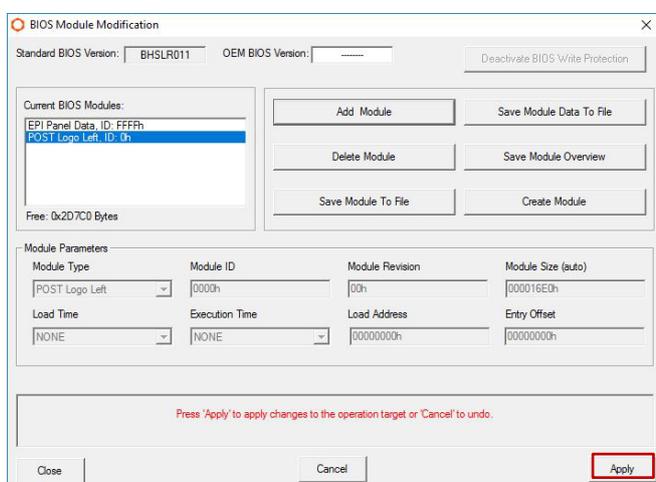
- Once this is completed, click on “Create Module” button.



- Chose your designated module file name (in this example "PostLogoLeft.mod").



- Click on "Add Module" button.



- The designated POST Logo Left module must be visible in the list of modules.

- Click on "Add Module" button.

- "Changes successfully applied" will be displayed in red letters in the text box above the "Apply" button.

4 Additional Information:

Document	Source
CGUTIL Users Guide	www.congatec.com
CGOS API driver	www.congatec.com