Adding OEM Logo to the Intel® Server BIOS

White Paper for Intel® Server Boards based on Intel® Server Chipsets E7520, E7320, and E7525

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Enterprise Platforms and Services Division - Marketing

Revision History

Date	Revision Number	Modifications
June 21, 2004	0.9	Initial release.
August 2, 2004	1.0	Revised to release, packaged with tools.
November 11, 2004	1.1	Revise with update information of logo compiling into BIOS.
February 4, 2005	1.2	Revise with BIOS flash process.
February 18, 2005	1.3	Prepare for public release.
August 30, 2005	1.4	Added additional instructions for unzipping files. Re-grouped sections accordingly. Grammar edits.
November 10, 2005	1.5	Changed BIOS.zip to BIOS package to account for possible name variations.

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1. Introduction

This white paper describes the BIOS architecture that applies to Intel® Server Boards SE7520AF2, SE7520BD2, SE7520JR2, SE7320SP2, SE7320VP2, and SE7525GP2. This document will explain how to create a user customized logo (OEM logo) for inclusion into Intel's common BIOS, and how to program the logo into BIOS storage on the server board.

This white paper is divided into the following sections:

- **Chapter 1:** Introduction
- **Chapter 2:** Describes Intel's common BIOS User Interface regarding the allocation and size of BIOS logo.
- **Chapter 3:** Describes the tools and process for inserting the customized logo into Intel's common BIOS.
- **Chapter 4:** Describes the rolling BIOS feature and the method to update the BIOS with a customized logo, over-writing the existing logo.

2. Common BIOS User Interface

2.1 User Interface

During POST, one of two types of consoles can be used to display the user interface: a graphical console or a text-based console. Graphics consoles are in 640x480 mode; text consoles use 80 x 25 mode.

The console output is partitioned into three areas as shown by Figure 1:

- The System State Window at the top of the screen displays information about the current state of the system.
- The Logo/Diagnostic Window at the center of the screen displays the OEM splash screen logo or a diagnostic boot screen.
- The Current Activity Window displays information about the currently executing portion of POST, and provides an area for user prompts and status messages.

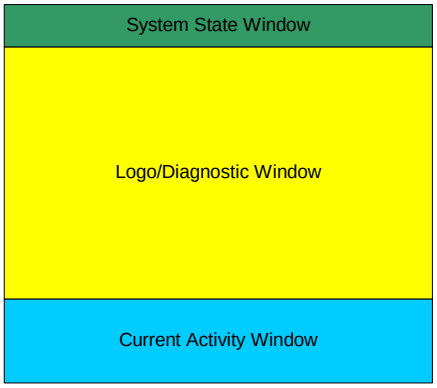

Figure 1. Console Output Screen

2.1.1 System Activity Window

The top row of the screen is reserved for the System State window. On a graphics console, the window is 640 x 48. On a text console, the window is 80 x 2.

The System State Window may be in one of three forms:

- An activity bar that scrolls while the system is busy.
- A progress bar that measures percent complete for the current task.
- An attention-required bar. The attention bar is useful for tasks that require user attention for processing may continue.

2.1.2 Logo/Diagnostic Window

The middle portion of the screen is reserved for the Logo/Diagnostic window. On a graphics console, the window is 640 x 384. On a text console, the window is 80 x 20.

The Logo/Diagnostic window may be in one of two forms depending on whether Quiet Boot Mode is selected in the BIOS Setup. If Quiet Boot Mode is selected (default mode), the BIOS displays a logo splash screen. If no logo is present in the flash ROM, or if Quiet Boot Mode is disabled in the system configuration, the summary and diagnostic screen is displayed.

When Quiet Boot Mode is selected and the user presses <Esc> during the boot process, the screen changes from the logo screen to the diagnostic screen.

2.1.3 Current Activity Window

The bottom portion of the screen is reserved for the Current Activity window. On a graphics console, the window is 640 x 48. On a text console, the window is 80 x 2.

The Current Activity window displays prompts for hot keys, and provides information on the system status.

2.2 System Diagnostic Screen

Boot information, options, and detected hardware information are displayed on the System Diagnostic Screen.

2.2.1 Static Information Display

The Static Information Display area presents the following information:

- Copyright message
- BIOS ID
- Current processor configuration
- Installed physical memory size

2.3 Quiet Boot / OEM Splash Screen

The BIOS implements Quiet Boot to fulfill the *Microsoft Hardware Design Guide 3.0* requirement that the BIOS provide minimal startup display during BIOS POST. System start-up must draw the end user’s attention only to errors or when there is a need for user action. By default, the system must be configured so that the local screen does not display memory counts, device status, etc. It must present a "clean" BIOS start-up. The only screen display allowed is the OEM splash screen and copyright notices.

The Quiet Boot process is controlled by a Setup Quiet Boot Mode option. If this option is set, the BIOS displays an activity indicator at the top of the screen and a logo splash screen in the middle section of the screen on the local console. The activity indicator measures POST progress and continues until the operating system gains control of the system. The splash screen covers any diagnostic messages in the middle section of the screen. Although the logo is displayed on the local console, diagnostic messages are displayed on remote text consoles.

Quiet Boot may be disabled by clearing the Setup Quiet-Boot option or by the user pressing the <Esc> key while in Quiet Boot mode. If Quiet Boot is disabled, the BIOS display diagnostic messages in place of the activity indicator and the splash screen.

With the use of an Intel-supplied utility, the BIOS allows OEMs to override the standard Intel logo with one of their own design.

If BIOS console redirection is enabled, the OEM logo splash screen will be automatically cleaned and only diagnostic messages will be displayed. This is because serial console redirection can only redirect in text mode (diagnostic message) and not in graphic mode (OEM logo).

3. Creating the Logo

Create an image with a size of 640 x 480. Use the following guidelines to ensure the logo fits within the Diagnostic / Logo window:

- The image size must be in the vertical center of a 640 x 480 image file.
- The image itself must be 640 x 384.
- The top 48-pixel height must be solid black to accommodate the System State window.
- The bottom 48-pixel height must be solid black to accommodate the Current Active window.

See the sample image and measurements below, noting the required black strips along the top and the bottom of the image.

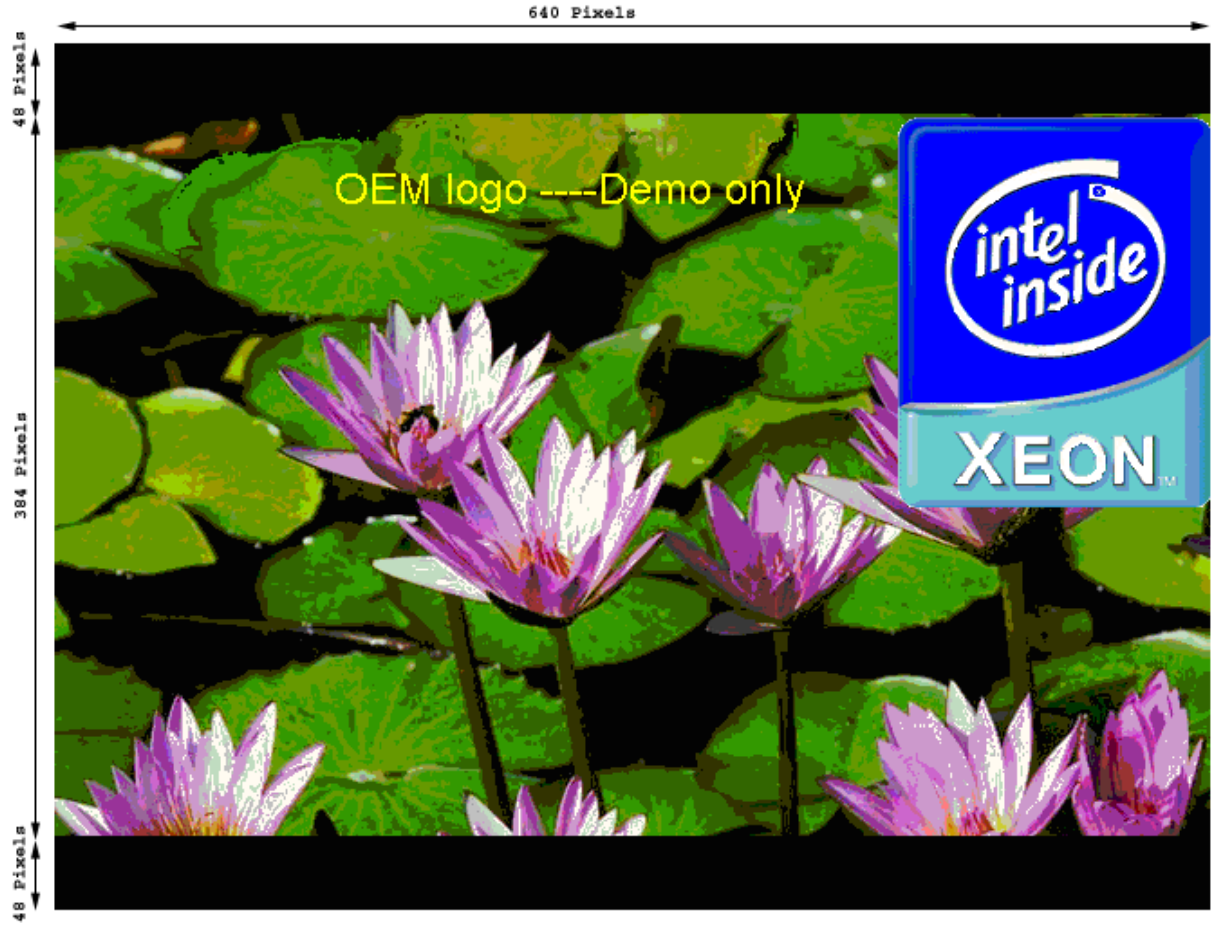

Figure 2. Sample Logo Image

4. Preparing to Update the Flash ROM with the Logo

1. Create a temporary folder on your hard drive.

2. Download the LOGOTOOLS.ZIP file from http://support.intel.com/support/motherboards/server/. Put the file in the temporary folder.

3. Download the BIOS package from http://support.intel.com/support/motherboards/server/. Put the file in the temporary folder.

4. Extract the contents of the BIOS package into the temporary folder:

   - README.TXT
   - bios.zip
   - floppy.zip
   - recovery.zip
   - AMIBOOT.000
   - AMIBOOT.001
   - AFUDOS.EXE
   - floppy.exe
   - install.bat
   - MAKEFLPY.BAT

5. Insert a blank 1.44 MB disk into the floppy drive. Run floppy.exe from the temporary folder created in step 1. When completed, the floppy disk will contain the following files:

   - AUTOEXEC.BAT
   - COMMAND.COM
   - CONFIG.SYS
   - FINDDISK.EXE
   - HIMEM.SYS
   - IBMBIO.COM
   - IBMDOS.COM
   - VDISK.SYS

6. From the temporary folder created in step 1, copy AFUDOS.EXE and install.bat to the floppy disk.

7. In the temporary folder in step 1, extract the files in bios.zip (note the lower-case filename). The following files will be extracted:

   - AFUDOS.EXE
   - FBB.BAT
   - Sjr2a081.rom (This is an example filename. The actual filename varies by product)

8. In the temporary folder created in step 1, extract the files in LOGOTOOLS.ZIP.

9. Copy lha.exe to the floppy disk.

10. Copy the custom bitmap file you created into the temporary folder that contains OEMLOGOD.EXE

11. From the Windows Taskbar, select Start / Run. Type **cmd** in the and press <Enter> to open a DOS window

12. Change directories to the temporary folder in which you placed the files.

13. Run the following command:

    `OEMLOGOD <RomFileName>.rom <NewOEMImageFileName> [/options]`

    Where

    - `RomFileName` is the rom image file. It has an extension of .rom. The name Sjr2a081.rom is used in the examples in this document.
    - `NewOEMImageFileName` is the name of your logo file.
    - `[/options]` is replaced with one of the following:
      - `[/F]` to force replacement of the OEM logo, even if the logo formats do not match.
      - `[/N]` to insert the 16-color BMP without converting it to the default AMI format.
      - `[/FN]` to force replacement of the OEM logo without converting a 16-color BMP to the default AMI format.
      - `[/D]` to deletes the logo module from the ROM file.

    Example command: `OEMLOGOD sjr2a081.rom oem.bmp`

Several messages are displayed. Watch the compiling window to ensure the new logo compiled into the common BIOS image. Watch for the line indicated by the following diagram. If error messages are reported, see Section 4.1, “Troubleshooting”.

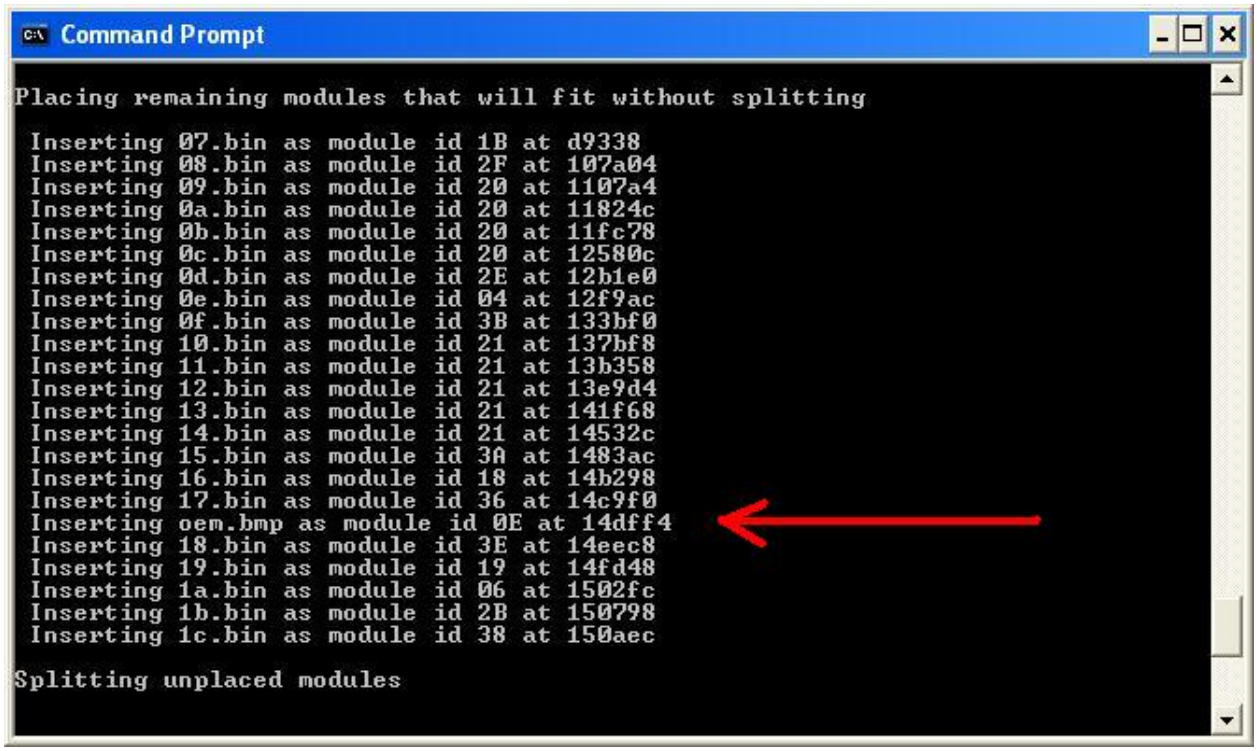

Figure 3. Logo Compile Window indicating Success

14. Use the following command to compress your custom ROM image file:

    `lha a <RomFileName>.LZH <RomFileName>.rom`

    Where:

    - `<RomFileName>.LZH` is the LZH file that will be created. This is the same RomFileName used in step 13, but with an extension of .LZH.
    - `<RomFileName>.rom` is the RomFileName used in step 13.

    Example command: `lha a sjr2a081.LZH sjr2a81.rom`

15. Copy the new <RomFileName>.LZH file to the floppy disk.

16. Edit install.bat on the floppy disk to replace the contents with the following lines:

```
@echo Please wait while files are copied to RAMdrive...
@copy a:COMMAND.COM . /y >nul:
@echo Copying AFUDOS.EXE to RAMdrive...
@copy a:AFUDOS.EXE . /y >nul:
@echo Copying LHA.EXE to RAMdrive...
@copy a:LHA.EXE . /y >nul:
@echo Copying BIOS Image to RAMdrive...
@copy a:sjr2a081.LZH . /y >nul:
@echo Building 2M BIOS Image...
@lha e rom_image_file.LZH
@echo Flash BIOS Image...
@Echo Flash Main BIOS & Boot Block
@AFUDOS /isjr2a081.rom /pb /n /c1
@set comspec=%RAMDRIVE%\command.com
```

4.1 Troubleshooting

If errors are reported during the compilation of the logo image, perform the following steps to retry the compilation:

1. Use the following command to remove the original logo from the common BIOS:
   `OEMLogod <RomFileName> [/D]`

2. Use the following command to re-compile the ROM file with your logo image:
   `OEMLogod <RomFileName> <NewOEMImageFileName> [/F]`

5. Updating the Flash ROM with the Logo

The Intel® Server Boards SE7520AF2, SE7520BD2, SE7520JR2, SE7320SP2, SE7320VP2, and SE7525GP2 support the DOS-based BIOS update utility, AFUDOS.EXE, that is contained in the BIOS package. Download the BIOS package from http://support.intel.com/support/motherboards/server/.

The BIOS update file automatically generates a bootable floppy disk that includes the tools necessary for updating the OEM logo on the onboard BIOS. Below are the steps to follow:

1. Your server board uses a feature called the rolling BIOS, which means two versions of the BIOS exist in your server platform. Make sure both flash banks contain the same BIOS revision/image. To do this:

   a. Flash the BIOS.

   b. Reboot to DOS.

   c. Flash the BIOS again.

   d. Reboot.

   For more information about the rolling BIOS features and updating a server that uses a rolling BIOS, see your server board documentation.

2. Insert the floppy disk you worked with in section 4 into the floppy drive.

3. Run install.bat from the floppy disk. The install.bat file was edited in section 4, step 15. The BIOS is updated.

4. (optional). Perform step 3 a second time to update the second version of the BIOS on your server. See your server board documentation for more information about the rolling BIOS features.

5. Remove the floppy disk and boot the system.