

Thomas-Krenn & Veeam Hardened Repository - Hardware Setup

Setting up and updating the RA1212-AIEPN+ server (Gigabyte MZ33-AR1): creating the hardware RAID in the BIOS, updating the BMC firmware and updating the BIOS — with all available methods.

Server	RA1212-AIEPN+ (Gigabyte MZ33-AR1)
Authors	Philipp Resch, Paul Streifinger – Thomas-Krenn.AG
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Language	English translation of the German original

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1 Creating the hardware RAID in the BIOS

This chapter walks through creating a hardware RAID array on the RAID controller of the RA1212-AIEPN+ server from within the system BIOS.

Caution: creating a virtual drive irreversibly deletes all data on the selected disks. Make sure the disks contain no data you still need.

1. Start the server and press **[Del]** or **[F2]**, depending on the server, to enter the BIOS.



Figure 1

2. Once in the BIOS, switch to the **"Advanced"** tab.

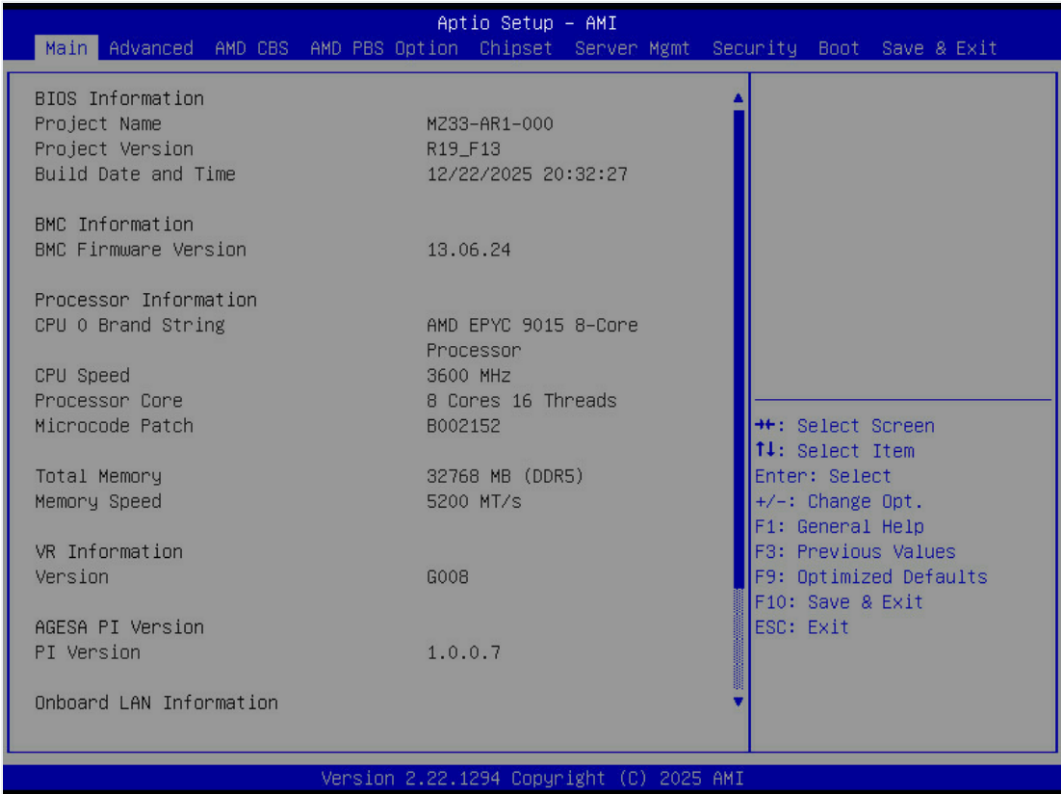


Figure 2

3. On the **"Advanced"** tab, select the RAID controller you want and confirm with **Enter**.

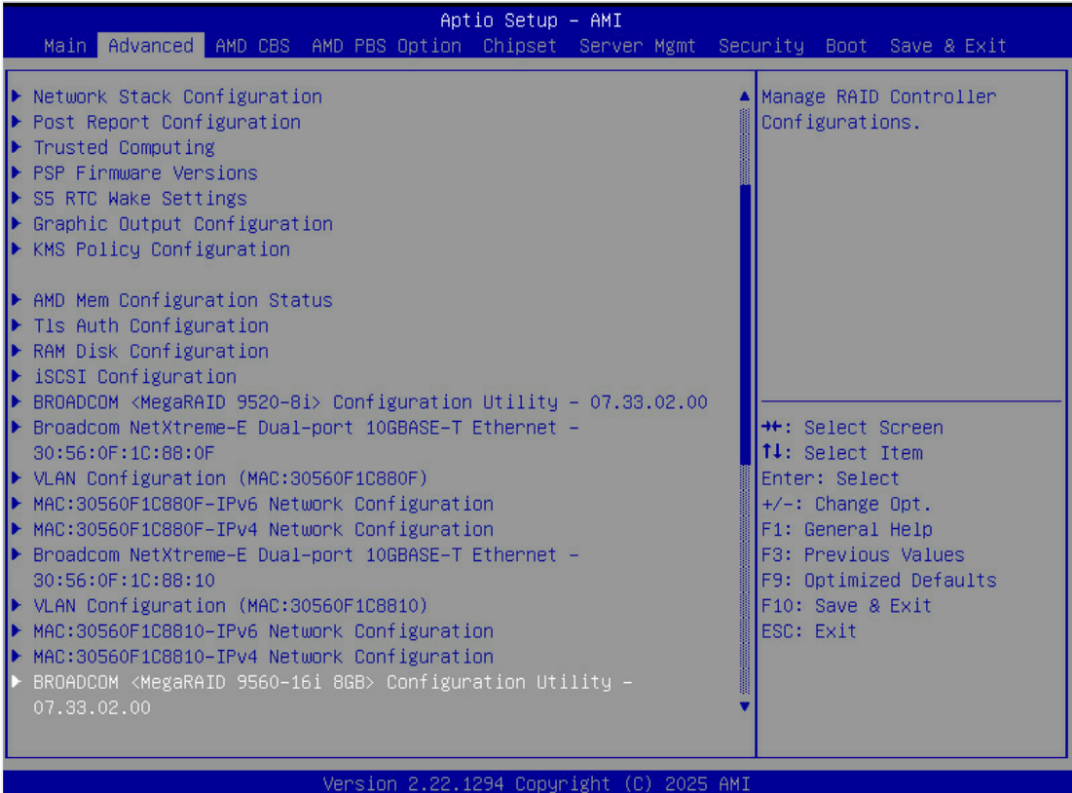


Figure 3

4. On the **"ACTIONS"** tab, select **"Configure"** and confirm with **Enter**.

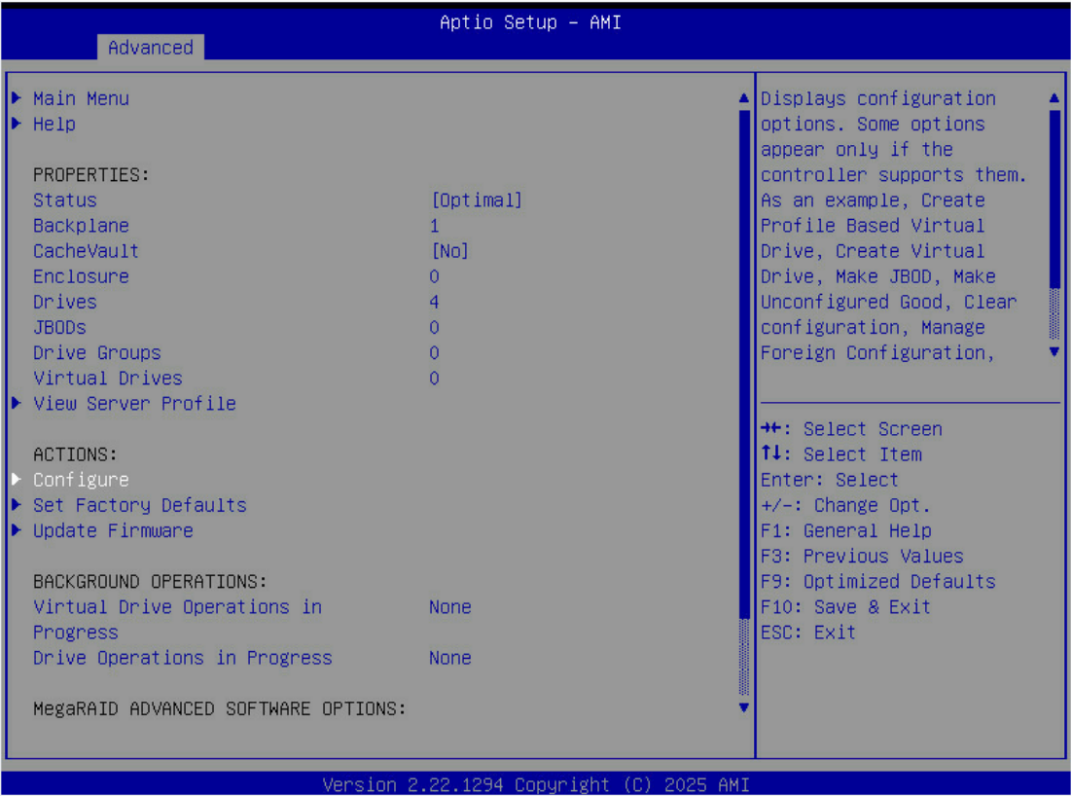


Figure 4

5. In the configuration menu, select **"Create Virtual Drive"**.

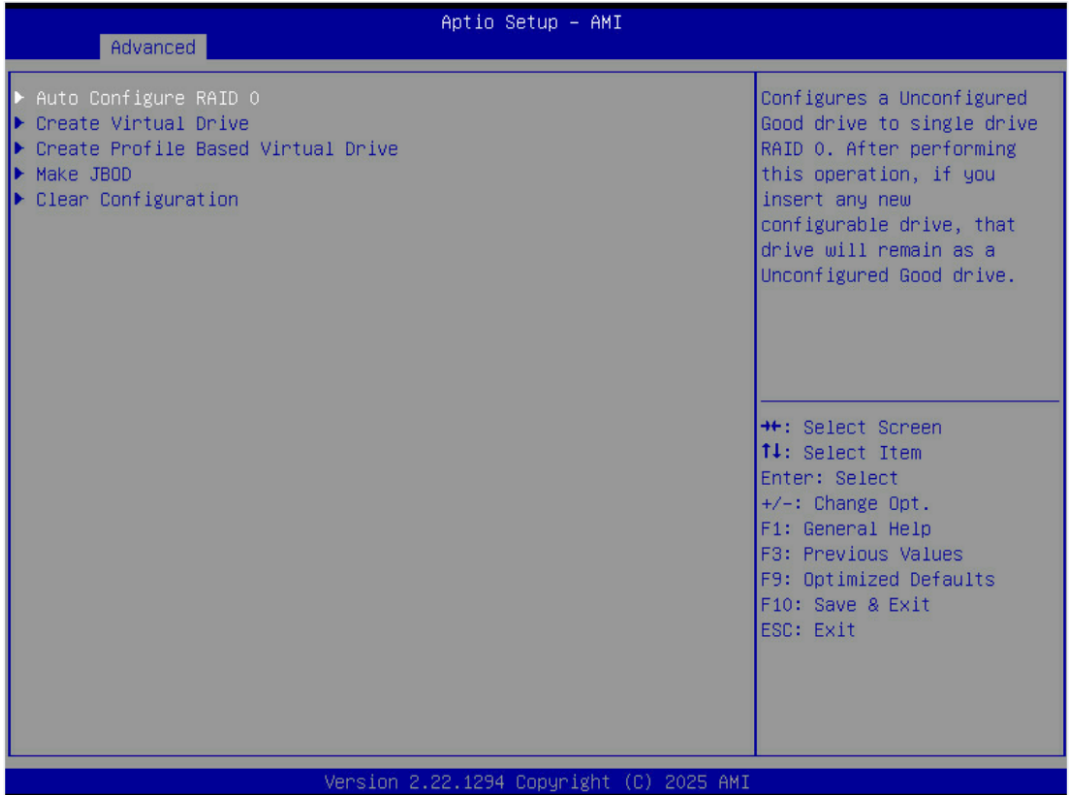


Figure 5

6. Select "Select RAID Level" and open it with **Enter.**

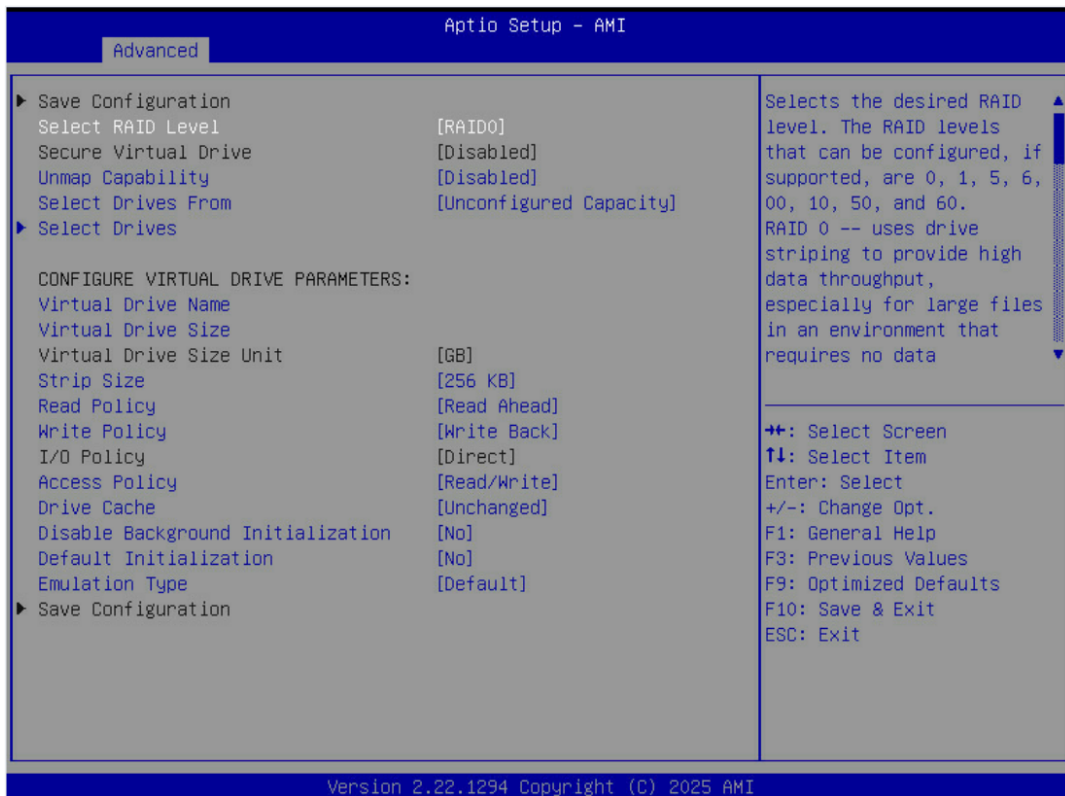


Figure 6

7. Select the RAID level you want.

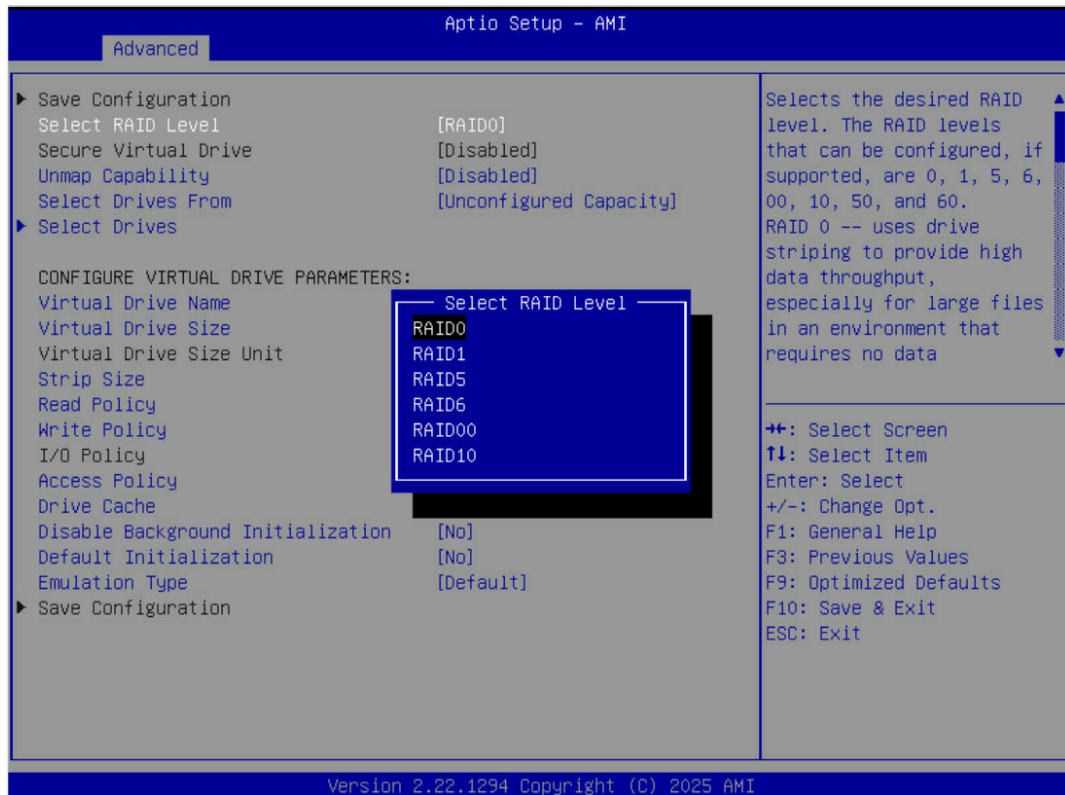


Figure 7

8. Open "Select Drives" with **Enter**.

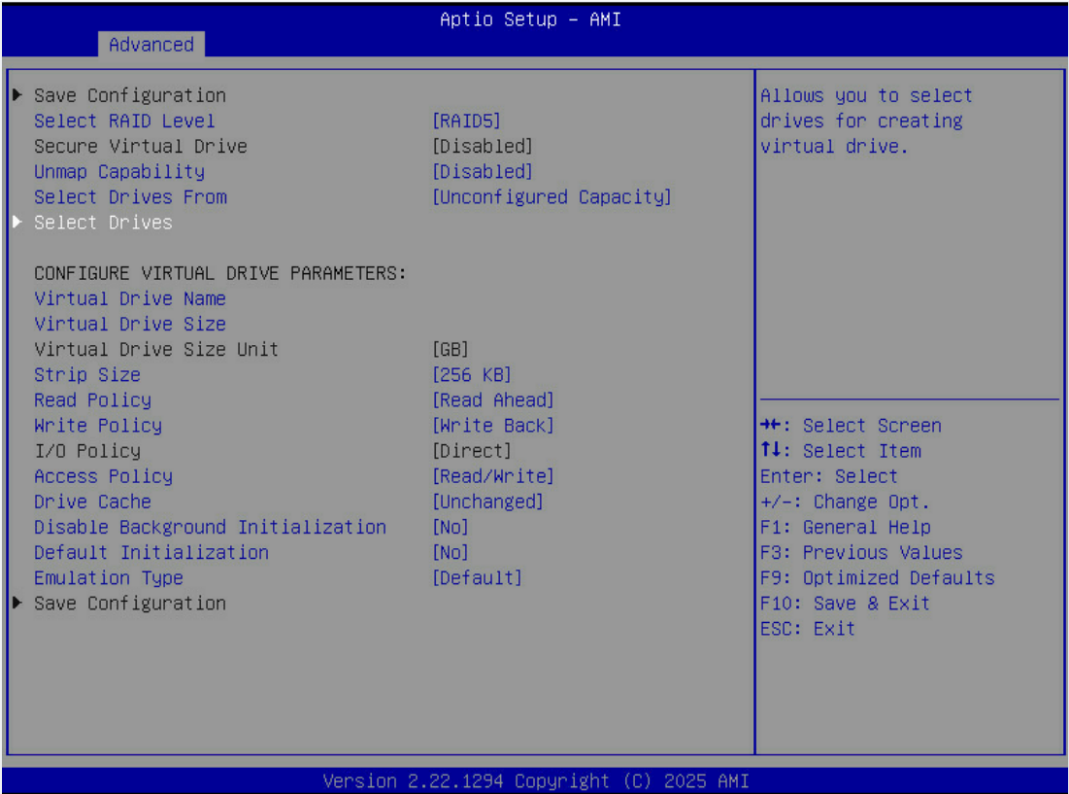


Figure 8

9. All drives are set to "Disabled" initially.

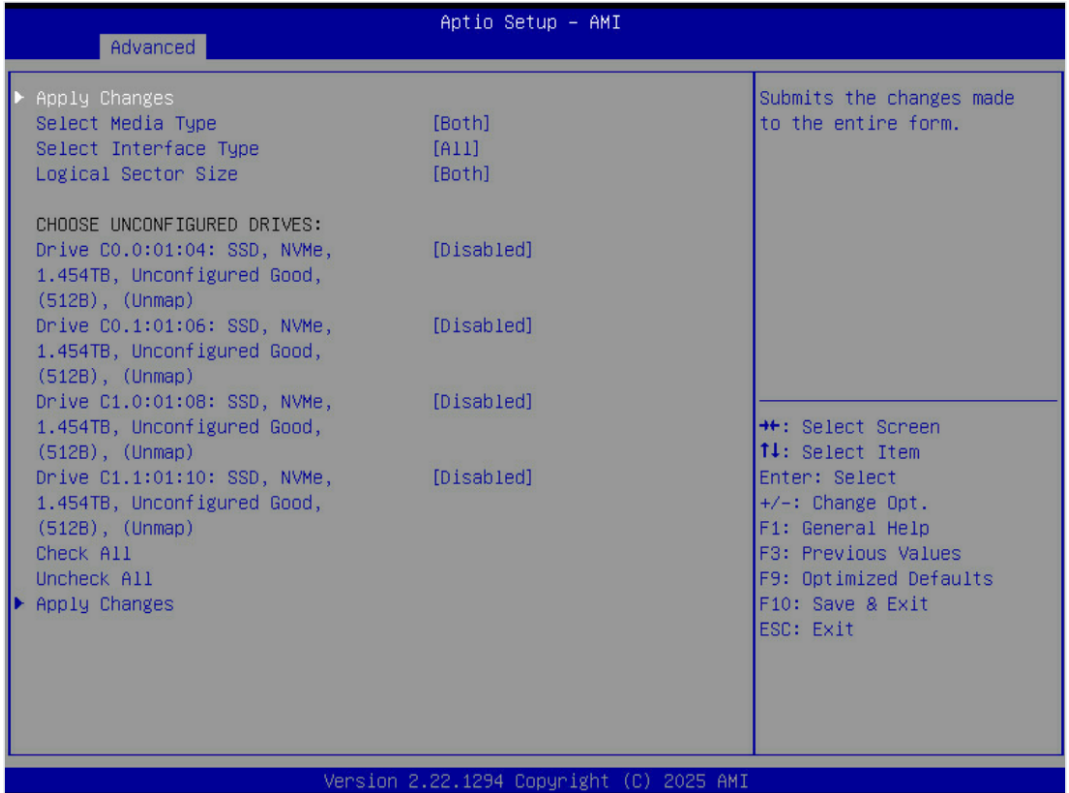


Figure 9

10. Select **"Check All"** to select all connected disks.

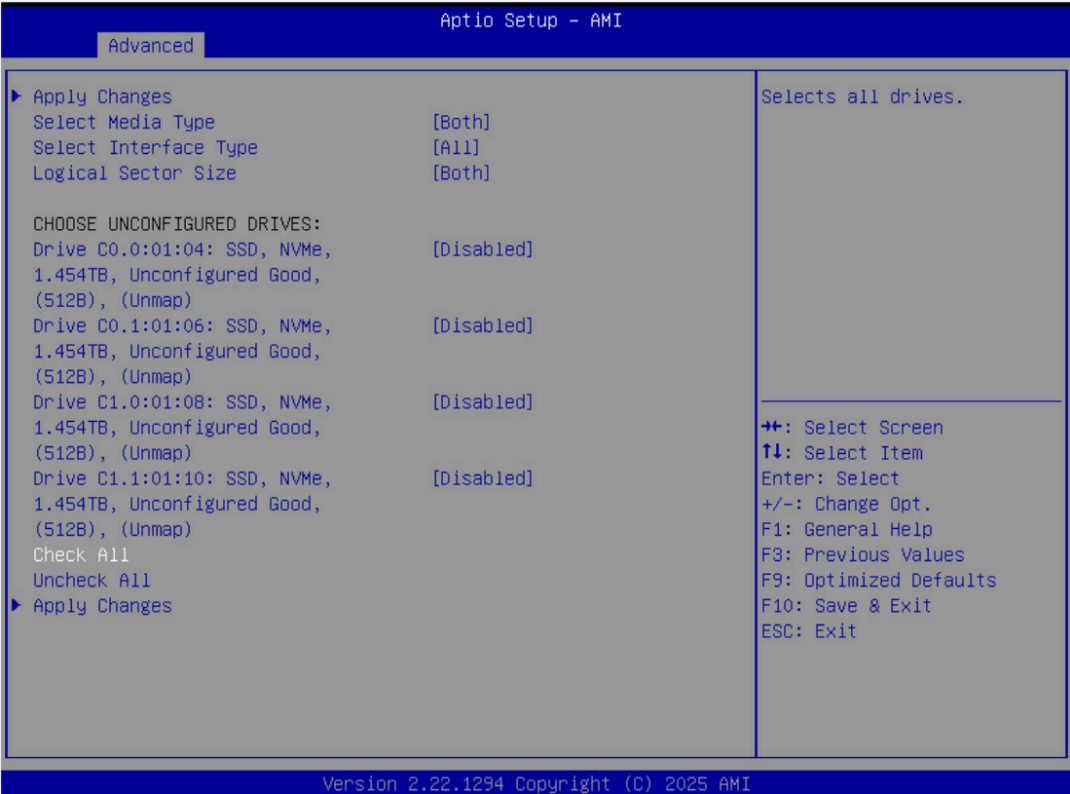


Figure 10

11. Confirm your configuration with **"Apply Changes"** and **Enter**.

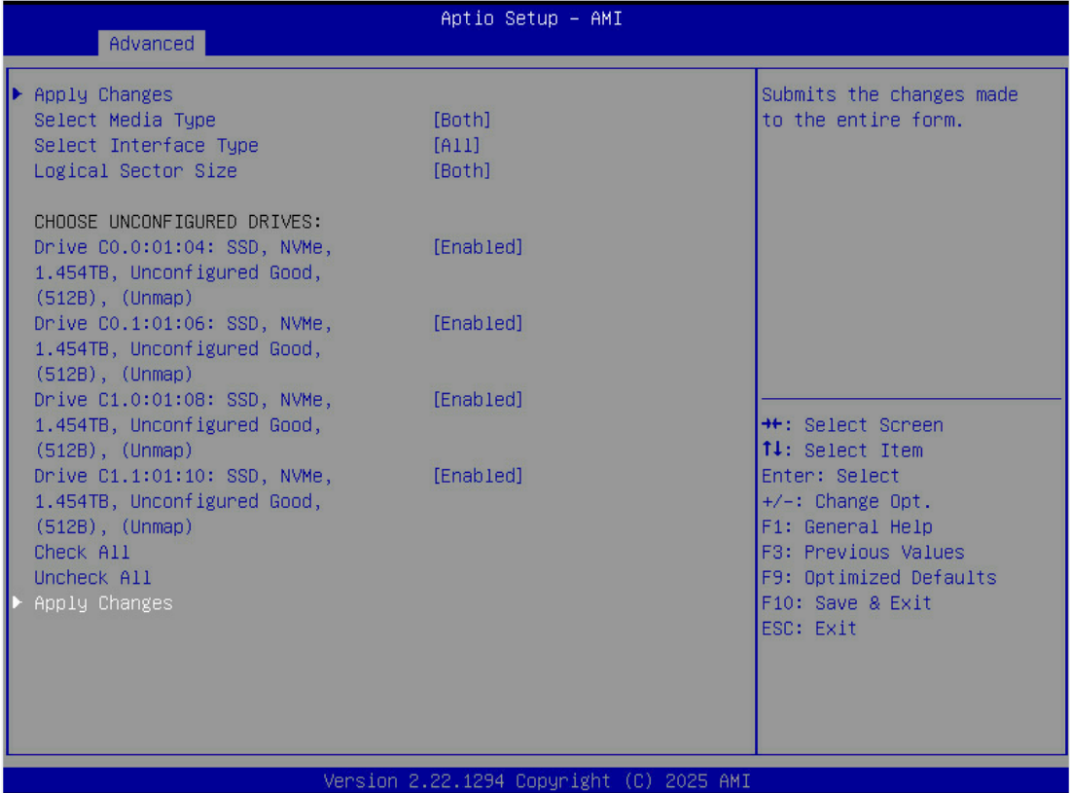


Figure 11

12. Confirm the "OK" with **Enter**.

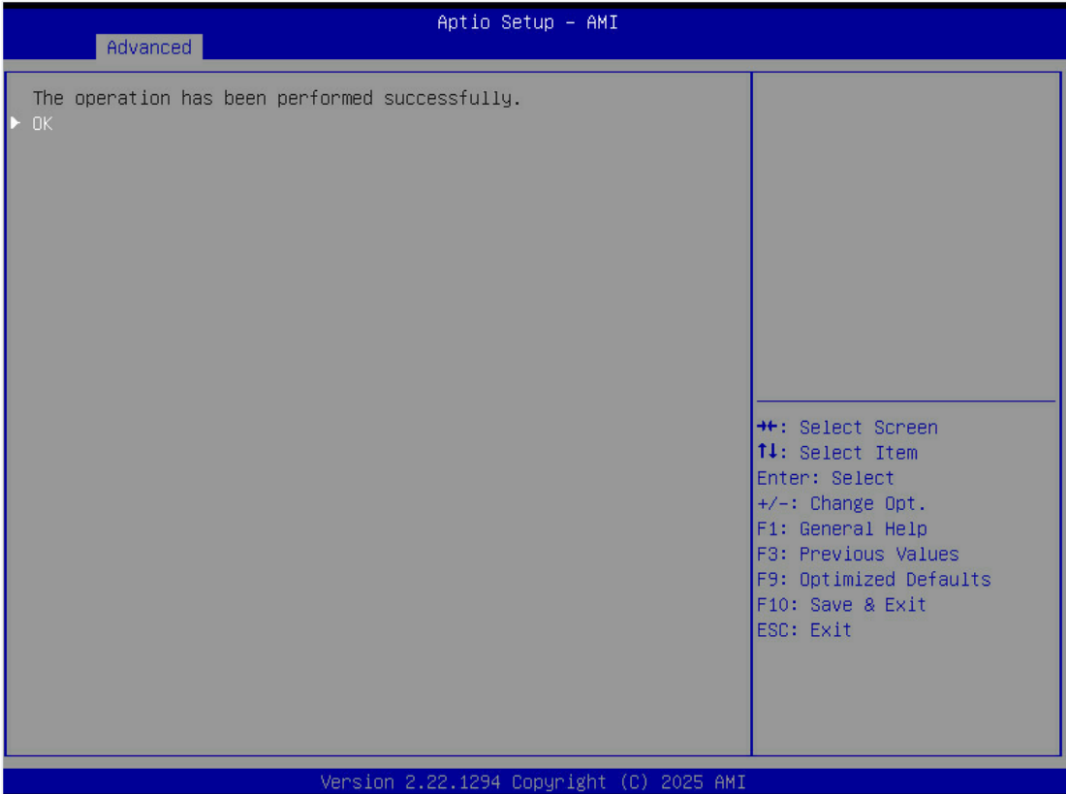


Figure 12

13. Under "Virtual Drive Name" you can optionally assign a name. Then select **Save Configuration**.

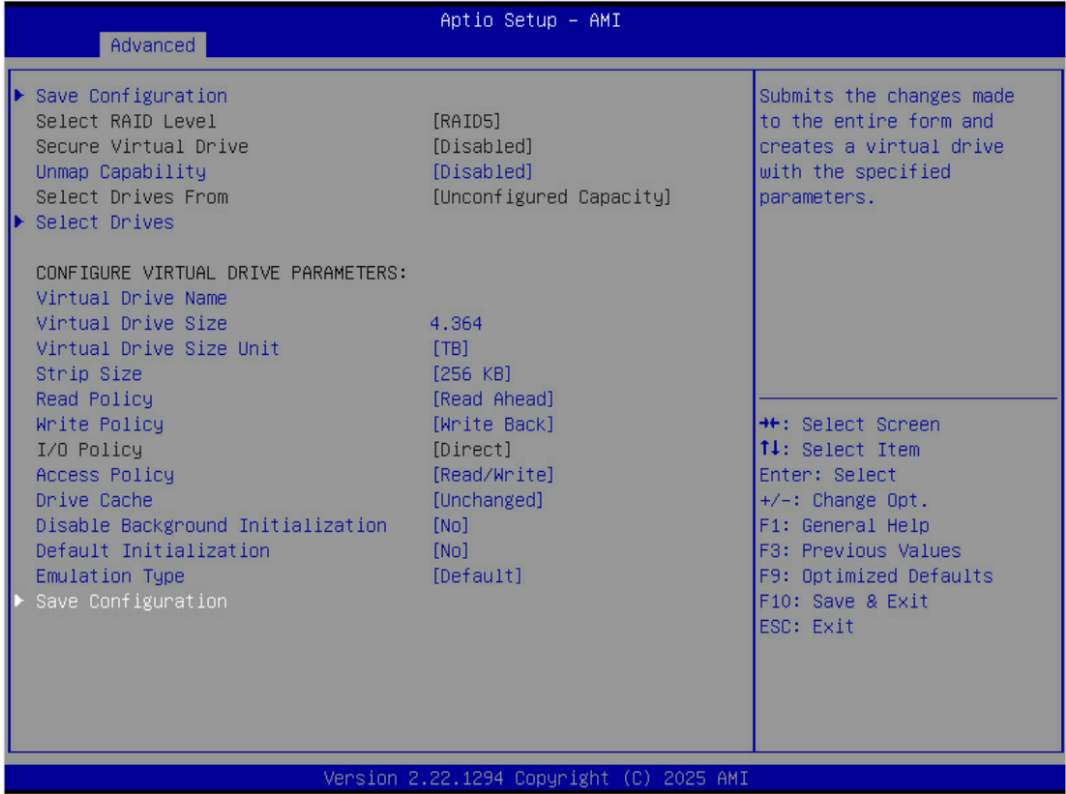


Figure 13

14. The BIOS warns you that all data on the selected drives will be irreversibly deleted.

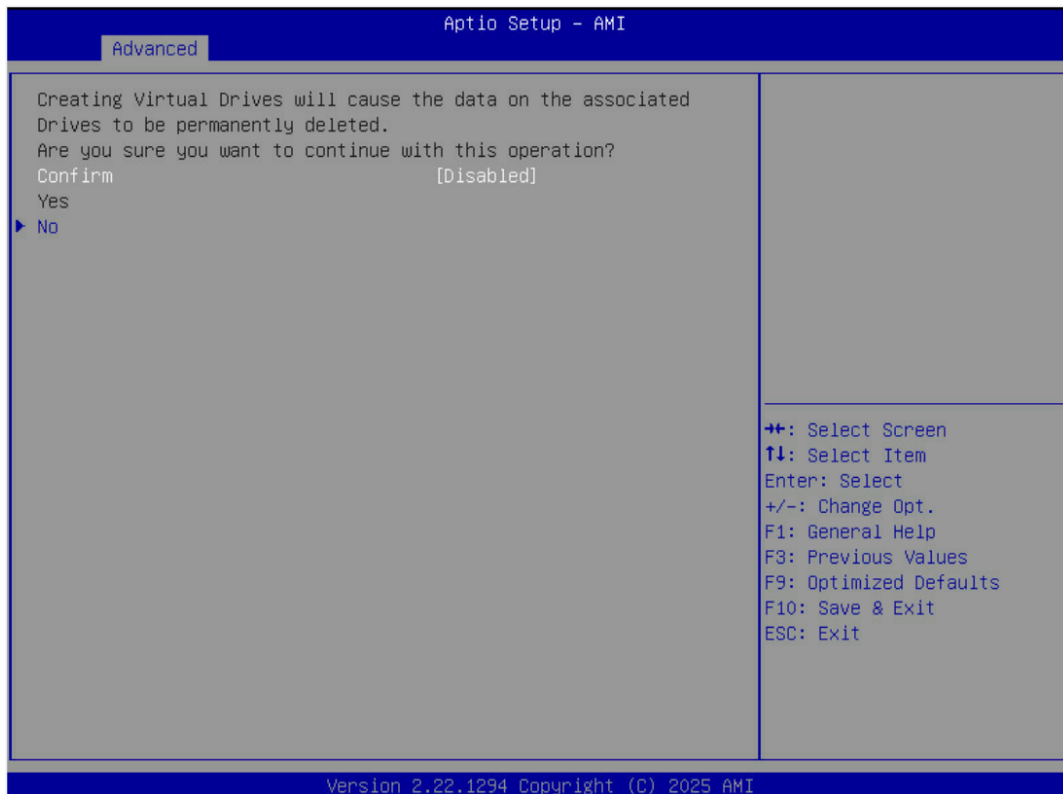


Figure 14

15. In the selection list, choose "**Enabled**" and confirm with **Enter**.

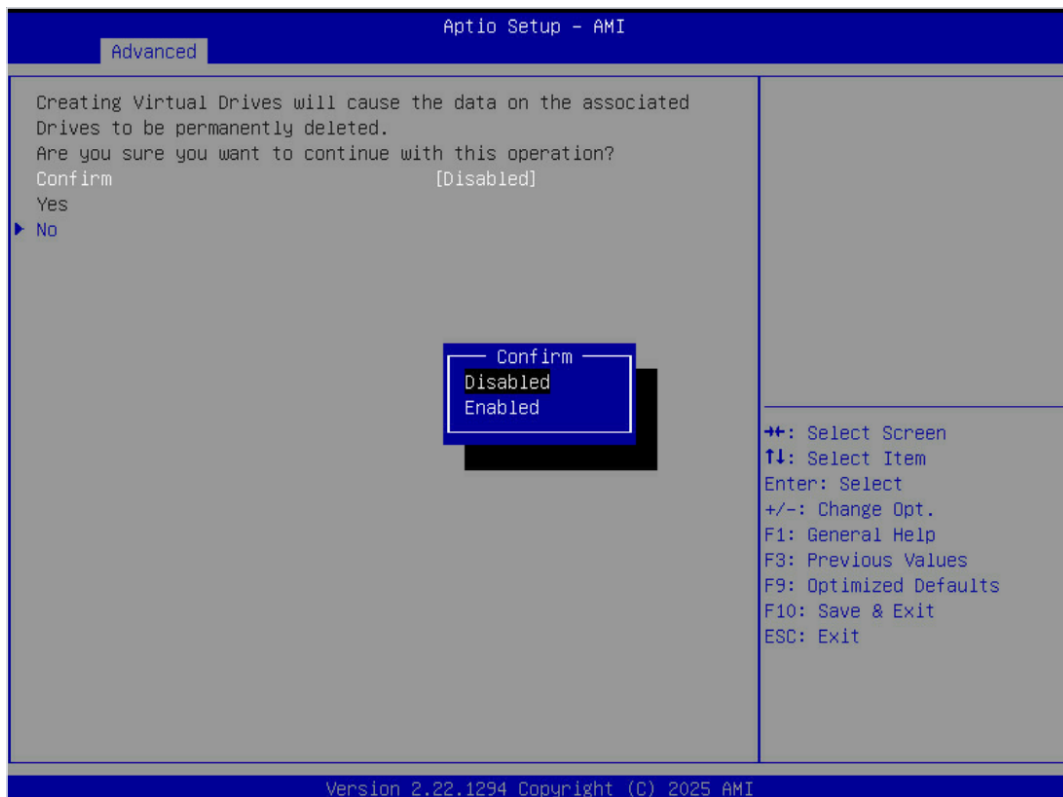


Figure 15

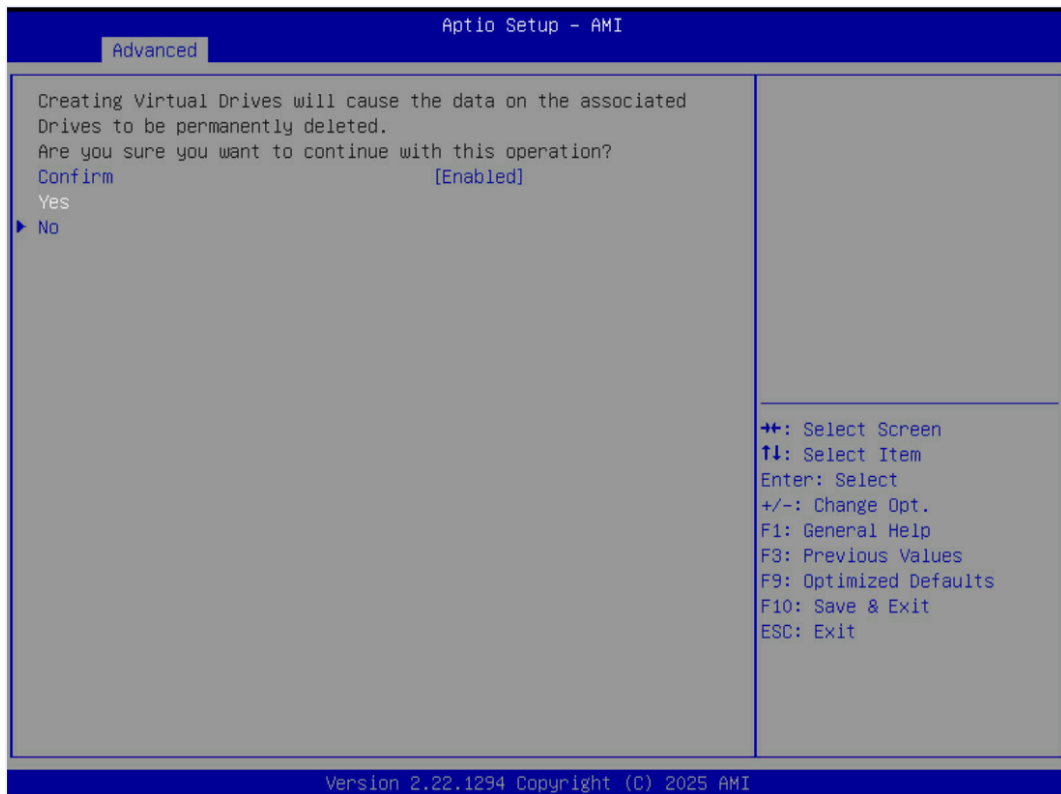
16. Select **"Yes"** and confirm with **Enter**.

Figure 16

17. The RAID array is now created.

Figure 17

18. Press **[ESC]** to leave the configurator and return to the BIOS **"Advanced"** screen.

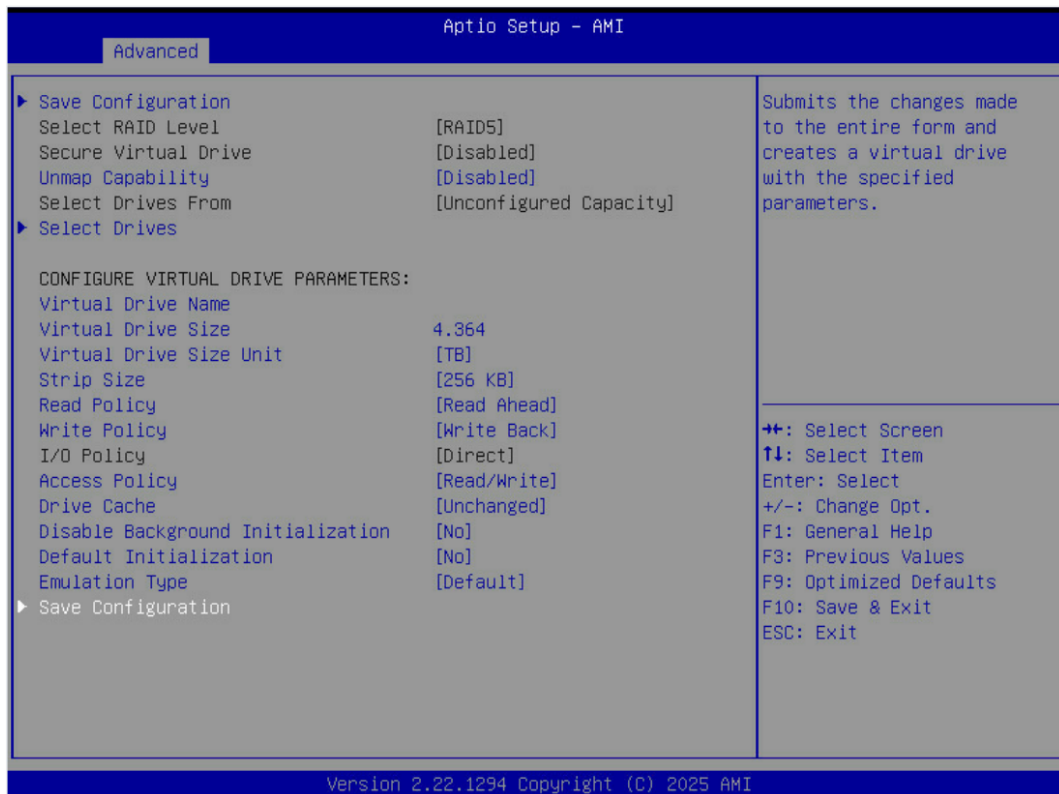


Figure 18

19. Next, switch to the **"Save & Exit"** tab.

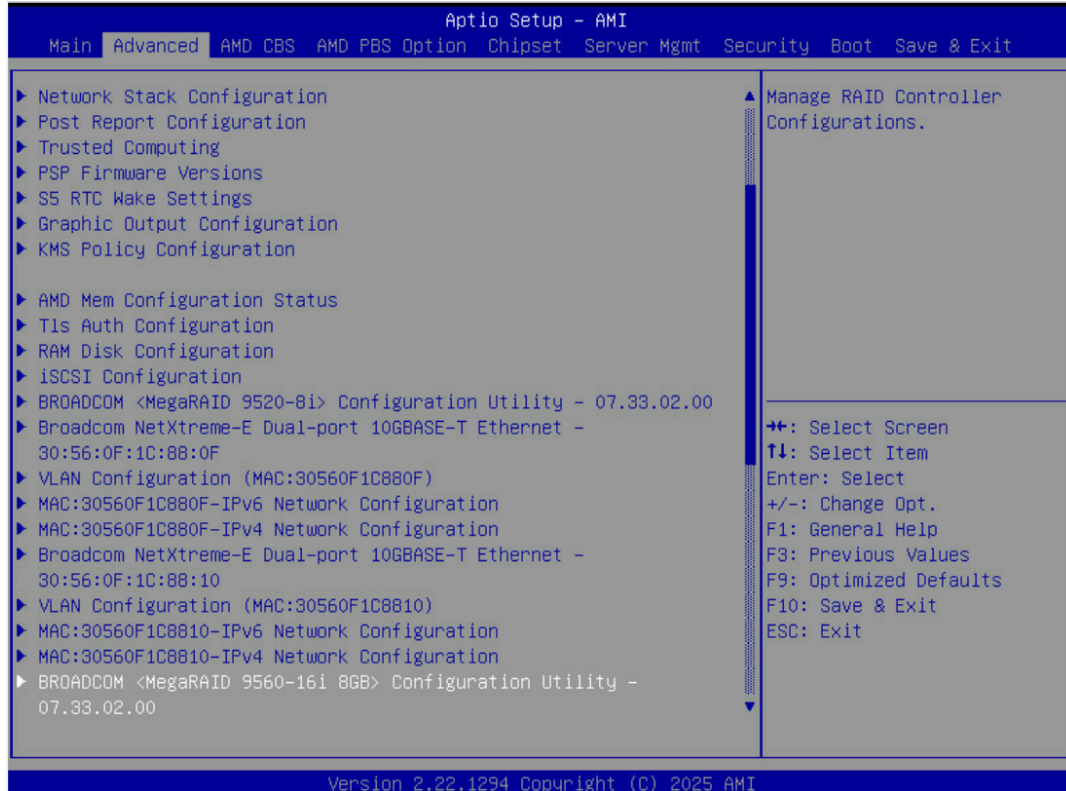


Figure 19

20. Select "Save Changes and Reset".

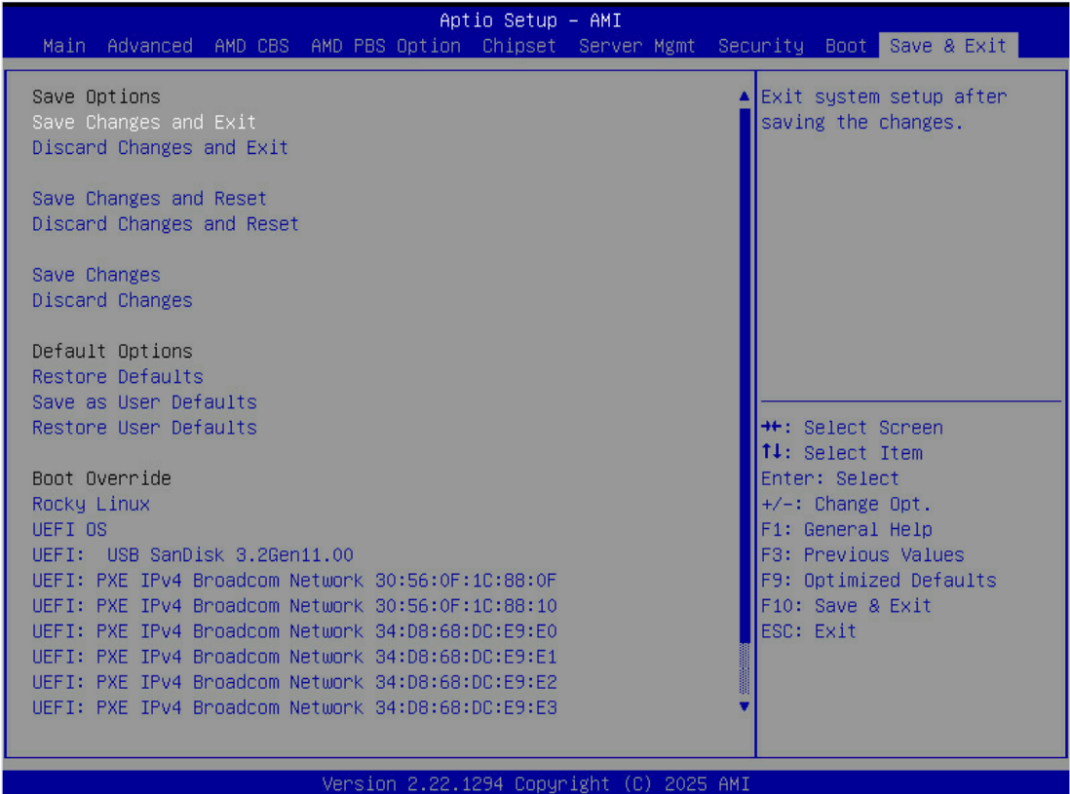


Figure 20

2 Updating the BMC firmware

Instructions for updating the firmware of the RA1212-AIEPN+ server (Gigabyte MZ33-AR1). Four methods are available: Linux, Windows, UEFI and IPMI.

2.1 Updating the BMC firmware under Linux

1. Obtain root privileges under Linux.
2. Change to the root directory of the upgrade package.
3. Choose one of the following flashing options:
 - Run `ami_bmc_fw_update_linux.sh` to flash the AMI firmware.
 - Run `insyde_bmc_fw_update_linux.sh` to flash the Insyde firmware.
4. Enter "**Y/y**" to preserve the configuration, or "**N/n**" to re-flash the entire BMC firmware.

Script names

```
ami_bmc_fw_update_linux.sh - update script
insyde_bmc_fw_update_linux.sh - update script
```

Syntax

```
ami_ami_bmc_fw_update_linux.sh [OPTION]
insyde_bmc_fw_update_linux.sh [OPTION]
```

Description of the options

Script for updating the BMC flash memory. The available options are listed below.

cs

- Select this option to update the firmware of the active / backup BMC (CS=1 is only supported on the GBT dual platform).
- **0:** active
- **1:** backup
- The default value is 0.

flashall

- Flash the entire BMC without a warning message.
- Default: the user is asked whether the configuration should be preserved.

preserve

- Flash the BMC and preserve the configuration without a warning message.
- Default: the user is asked whether the configuration should be preserved.

Architecture

x32

- Set the update tool to 32-bit mode.
- Default: x86 64-bit mode

arm

- Set the update tool to ARM mode (ARM Linux only supports 64-bit).
- Default: x86 64-bit mode

Example – flashing the entire BMC and selecting BMC address 0:

```
ami_bmc_fw_update_linux.sh cs 0 flashall  
insyde_bmc_fw_update_linux.sh cs 0 flashall
```

2.2 Updating the BMC firmware under Windows

1. Open the command prompt with Windows administrator privileges.
2. Change to the root directory of the upgrade package.
3. Choose one of the following flashing options:
 - Run `ami_bmc_fw_update_win.bat` to flash the AMI firmware.
 - Run `insyde_bmc_fw_update_win.bat` to flash the Insyde firmware.
4. Enter "**Y/y**" to preserve the configuration, or "**N/n**" to re-flash the entire BMC firmware.

Script names

```
ami_bmc_fw_update_win.bat - update script  
insyde_fw_update_win.bat - update script
```

Syntax

```
ami_bmc_fw_update_win.bat [OPTION]  
insyde_fw_update_win.bat [OPTION]
```

Description of the options

Script for flashing the BMC. The available options are listed below.

cs

- Select this option to update the firmware of the active / backup BMC (CS=1 is only supported on the GBT dual platform).
- **0**: active
- **1**: backup
- The default value is 0.

flashall

- Flash the entire BMC without a warning message.
- Default: the user is asked whether the configuration should be preserved.

preserve

- Flash the BMC and preserve the configuration without a warning message.
- Default: the user is asked whether the configuration should be preserved.

Architecture

x32

- Set the update tool to 32-bit mode.
- Default: x86 64-bit mode

Example – flashing the entire BMC and selecting BMC address 0:

```
ami_bmc_fw_update_win.bat cs 0 flashall
insyde_bmc_fw_update_win.bat cs 0 flashall
```

2.3 Updating the BMC firmware in UEFI

1. Change to the root directory of the upgrade package.
2. Choose one of the following flashing options:
 - Run `ami_bmc_fw_update_uefi.nsh` to flash the AMI firmware.
 - Run `insyde_bmc_fw_update_uefi.nsh` to flash the Insyde firmware.
3. Enter "**Y/y**" to preserve the configuration, or "**N/n**" to flash the entire BMC.

For the Insyde firmware, preserving the configuration is **not supported** in the ARM_UEFI environment.

Script names

```
ami_bmc_fw_update_uefi.nsh - update script
insyde_bmc_fw_update_uefi.nsh - update script
```

Syntax

```
ami_bmc_fw_update_uefi.nsh [OPTION]
insyde_bmc_fw_update_uefi.nsh [OPTION]
```

Description of the options

Script for updating the BMC flash memory. The available options are listed below.

cs

- Select this option to update the firmware of the active or the backup BMC (CS=1 is only supported on the GBT dual platform).
- **0**: active
- **1**: backup
- The default value is 0.

flashall

- Flash the entire BMC without a warning message.
- Default: the user is asked whether the configuration should be preserved.

preserve

- Flash the BMC and preserve the configuration without a warning message.
- Default: the user is asked whether the configuration should be preserved.

arm

- Set the update tool to ARM mode.
- Default: x86 64-bit mode

Example – flashing the entire BMC and selecting BMC address 0 under x86:

```
ami_bmc_fw_update_uefi.nsh cs 0 flashall  
insyde_bmc_fw_update_uefi.nsh cs 0 flashall
```

Example – flashing the entire BMC and selecting BMC address 0 in UEFI ARM mode:

```
ami_bmc_fw_update_uefi.nsh cs 0 flashall arm  
insyde_bmc_fw_update_uefi.nsh cs 0 flashall arm
```

2.4 Updating the BMC firmware via IPMI

1. Log in to the IPMI and then click **Maintenance**.

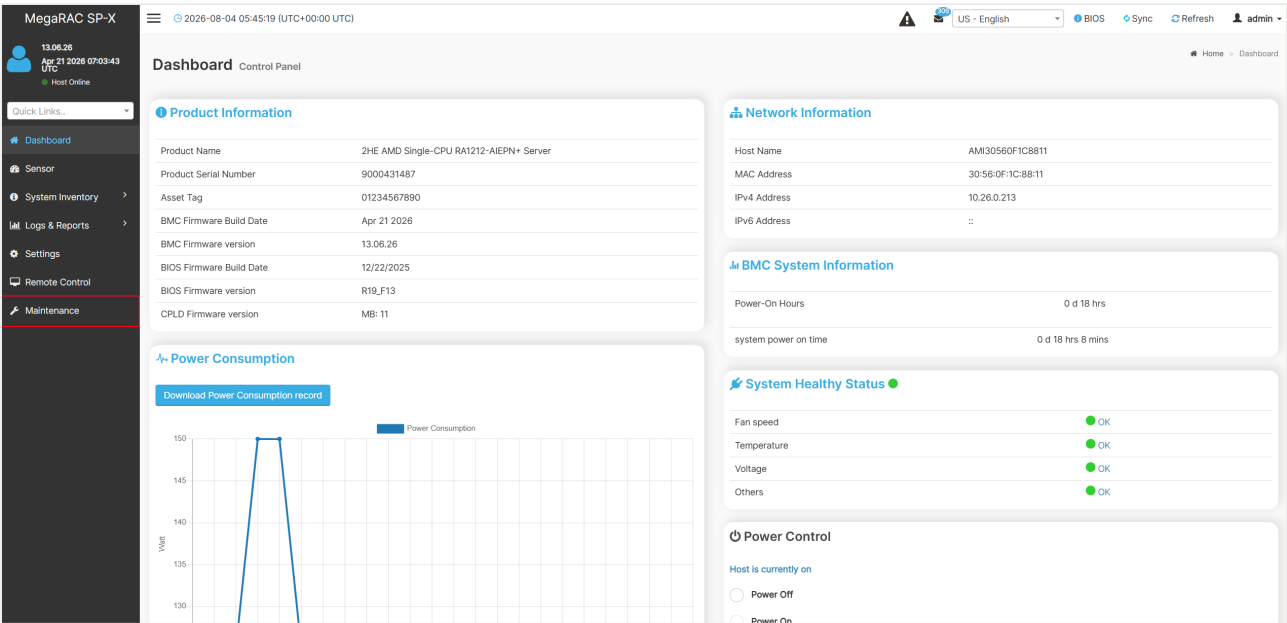


Figure 21

2. Select **Firmware Update**.

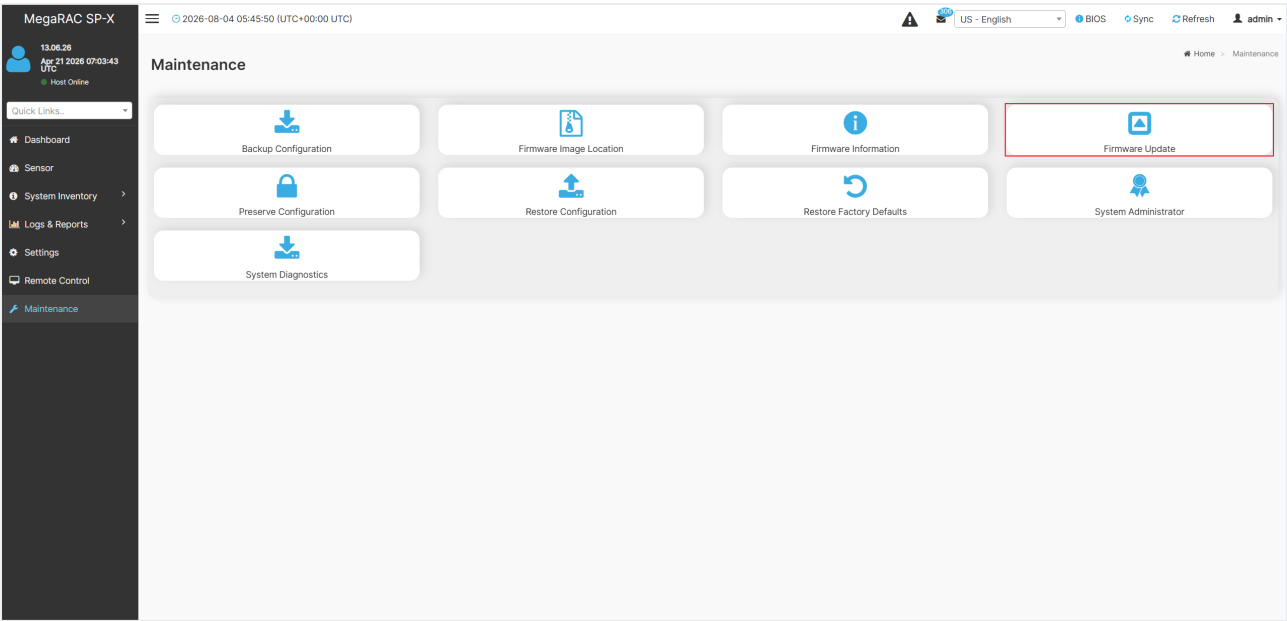


Figure 22

3. Click **Dump BIOS**, then click the folder icon and select the correct firmware update file (**important:** the file extension must be `.ima_enc`).

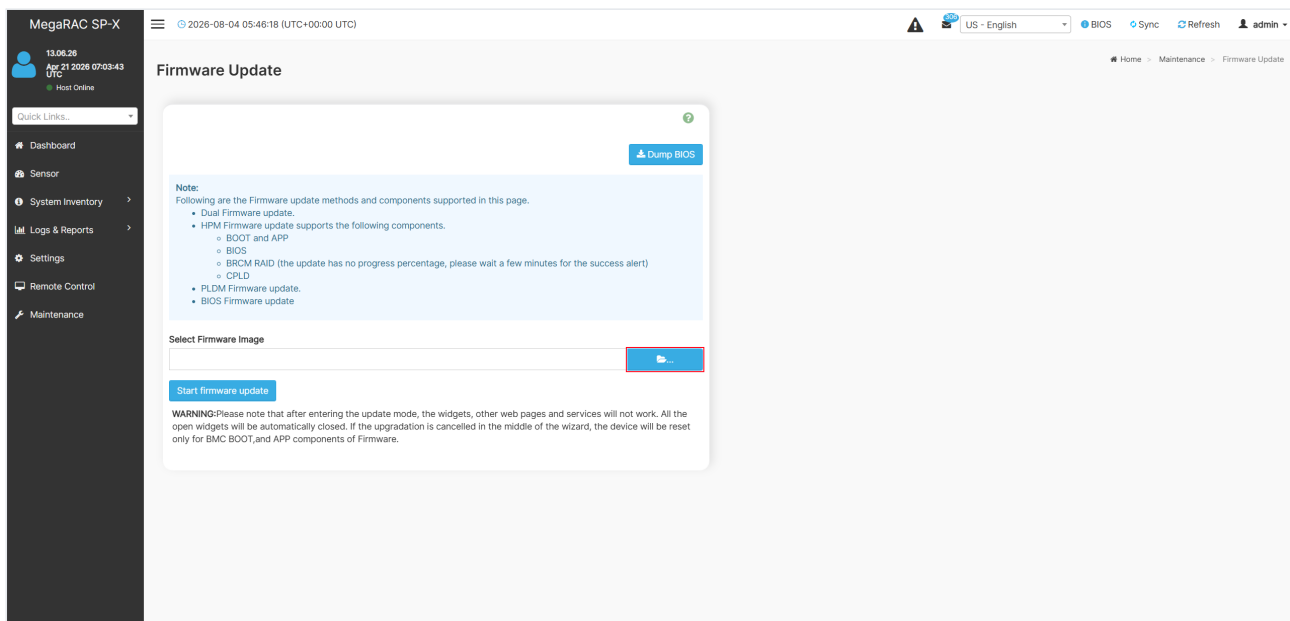


Figure 23

4. Check that the `.ima_enc` file is selected, then click **Start firmware update**.

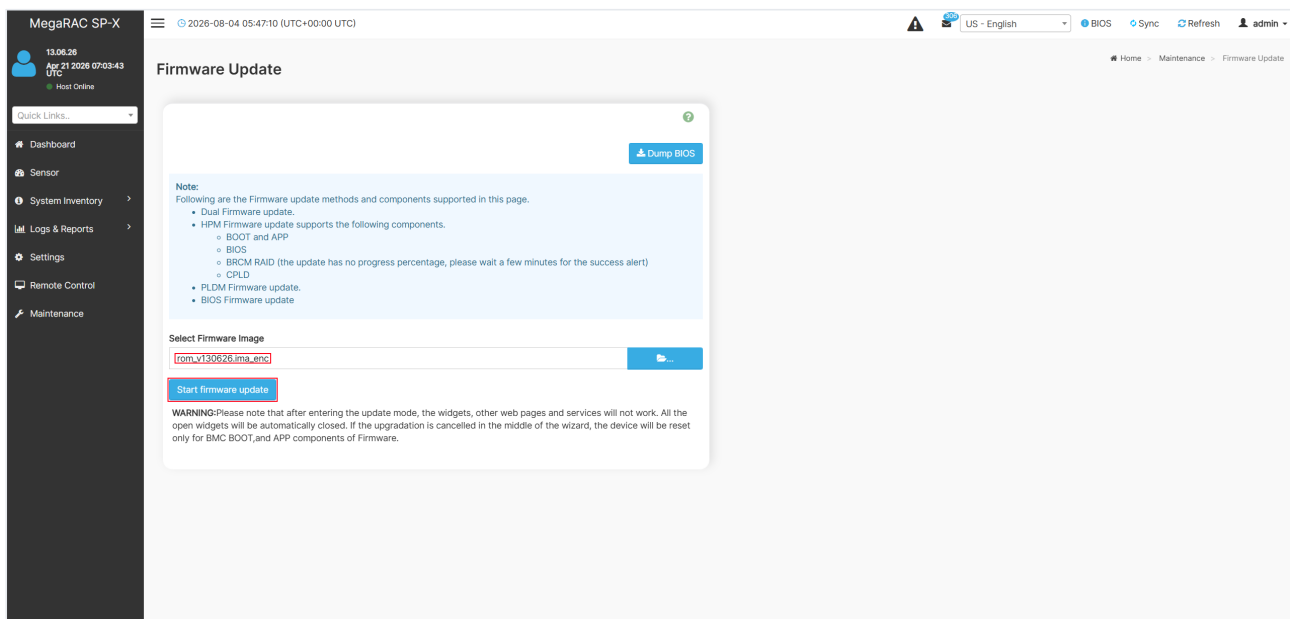


Figure 24

5. To keep all configurations, tick the **Preserve all Configuration** checkbox.

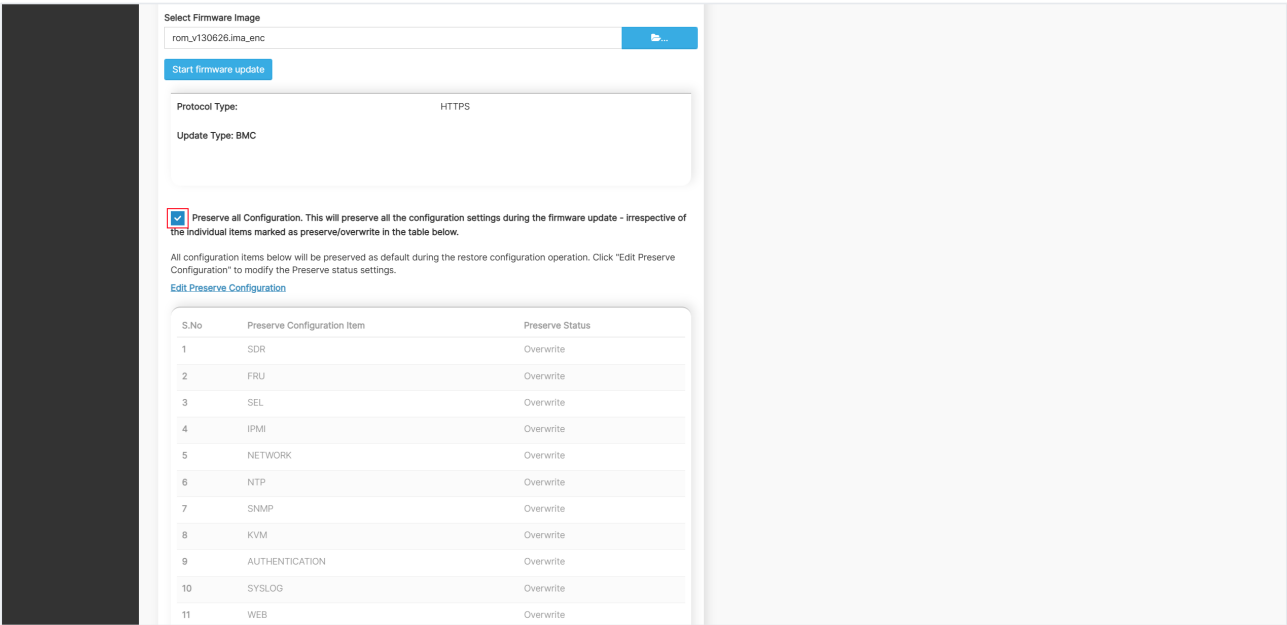


Figure 25

6. You can then click **Proceed to Flash**. An **Update Firmware** window should appear and the update will run.

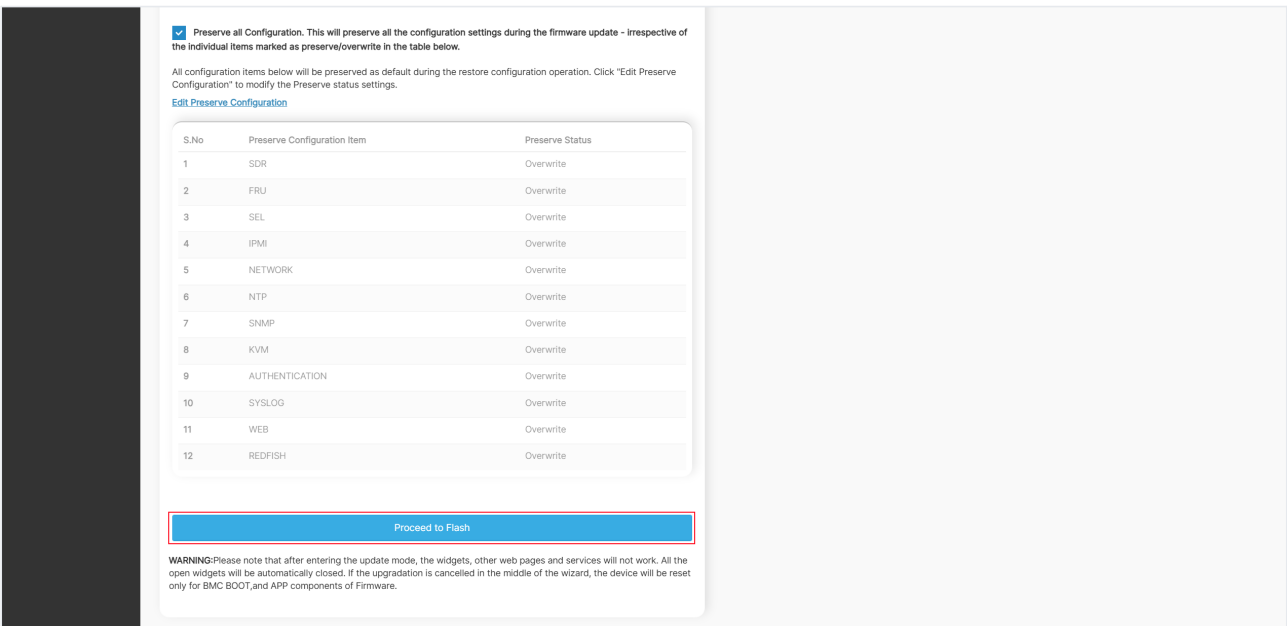


Figure 26

7. Once the update is completed, click **OK**. **Caution:** as soon as you click OK, the server restarts.

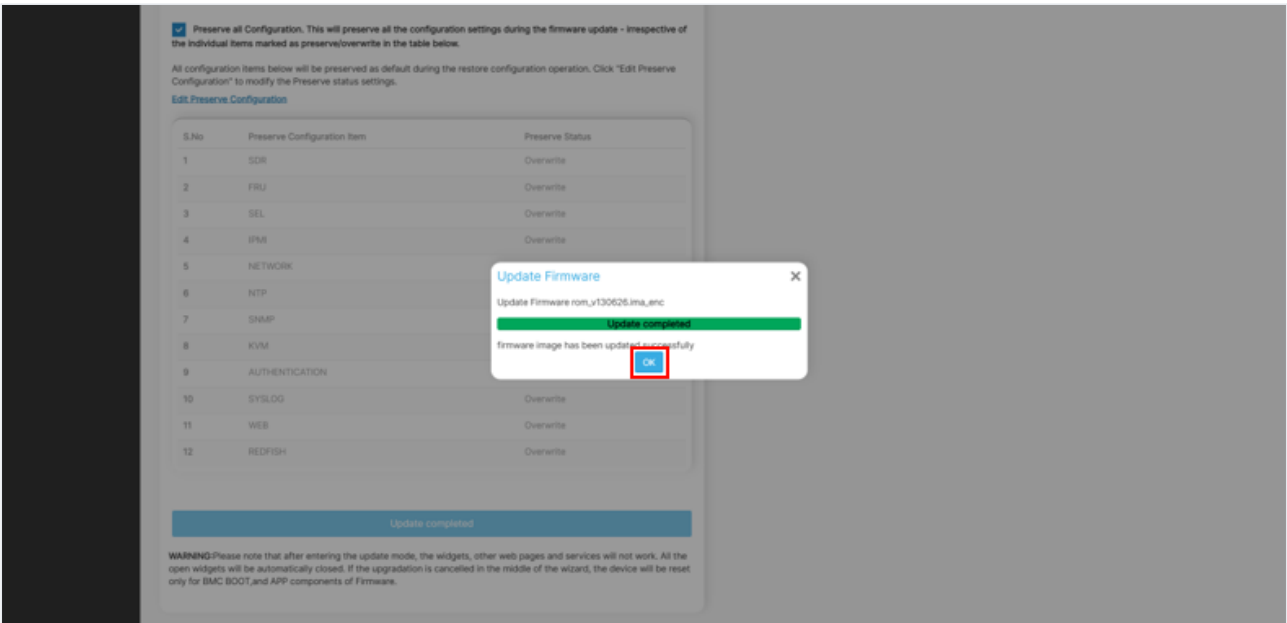


Figure 27

8. After the server has restarted, you can log in to the IPMI again and check the firmware version.

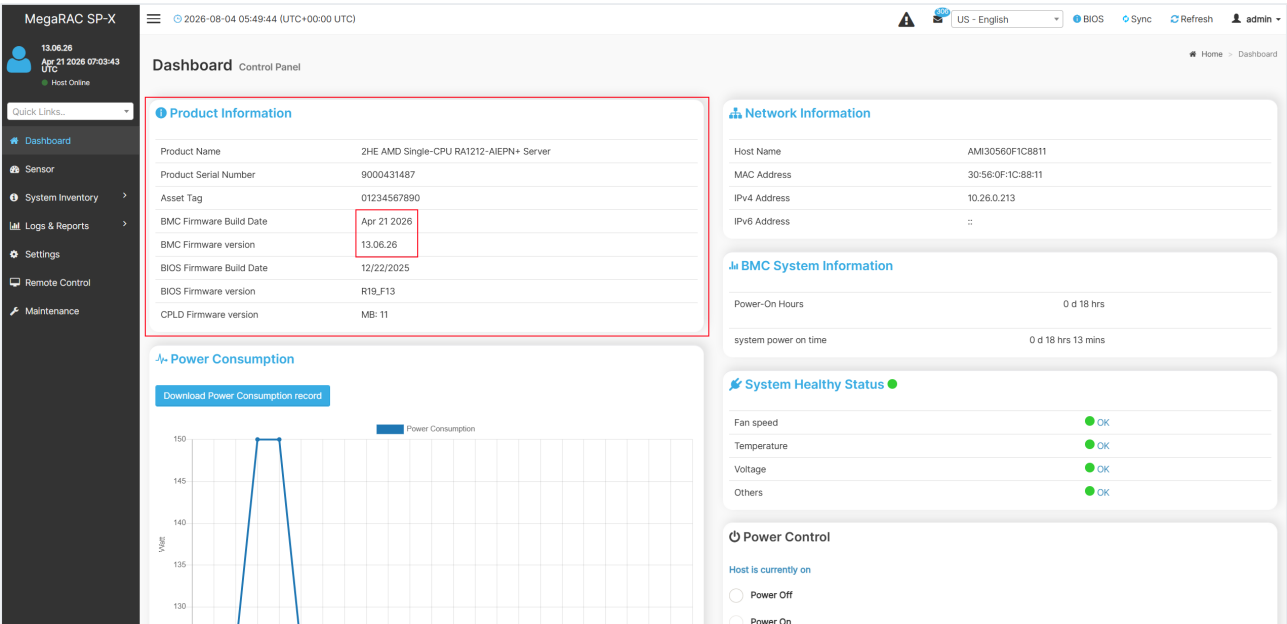


Figure 28

3 BIOS update

Instructions for updating the BIOS of the RA1212-AIEPN+ server (Gigabyte MZ33-AR1).

3.1 Before updating

1. Extract the file MZ33-AR1_R23_F16.zip onto a bootable USB stick formatted with FAT/FAT32.

3.2 BIOS update instructions for the EFI shell

1. Insert the USB stick into the system to perform the BIOS upgrade.
2. Switch the system on and boot into the built-in shell.
3. Enter your USB file system, e.g. fs0: or fsx:, where "x" is the number of your USB file system.
4. Flash script for the BIOS update:
 - For AMD EPYC 9004 series CPUs, run f_GtoT.nsh.
 - For AMD EPYC 9005 series CPUs, run f.nsh.
5. After the BIOS flash has completed, the system must be powered off for the changes to take effect.

3.3 BIOS update instructions for Windows

1. Insert the USB stick containing the BIOS update.
2. Use the command line.
3. For AMD EPYC 9004 series CPUs:
 - Enter \Tool\WIN\afuwin32 and run f_GtoT.bat for Windows 32-bit.
 - Enter \Tool\WIN\afuwin64 and run f_GtoT.bat for Windows 64-bit.
4. For AMD EPYC 9005 series CPUs:
 - Enter \Tool\WIN\afuwin32 and run f.bat for Windows 32-bit.
 - Enter \Tool\WIN\afuwin64 and run f.bat for Windows 64-bit.
5. After the BIOS flash has completed, the system must be powered off for the changes to take effect.

3.4 BIOS update instructions via IPMI

1. Log in to the IPMI and then click **Maintenance**.

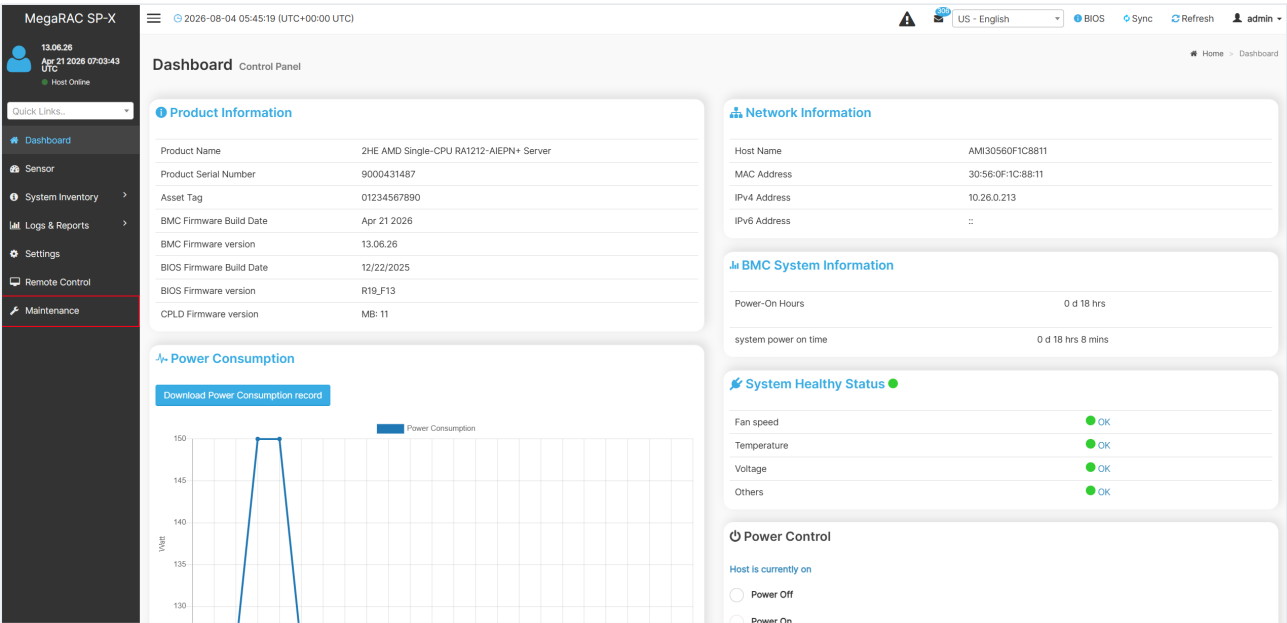


Figure 29

2. Select **Firmware Update**.

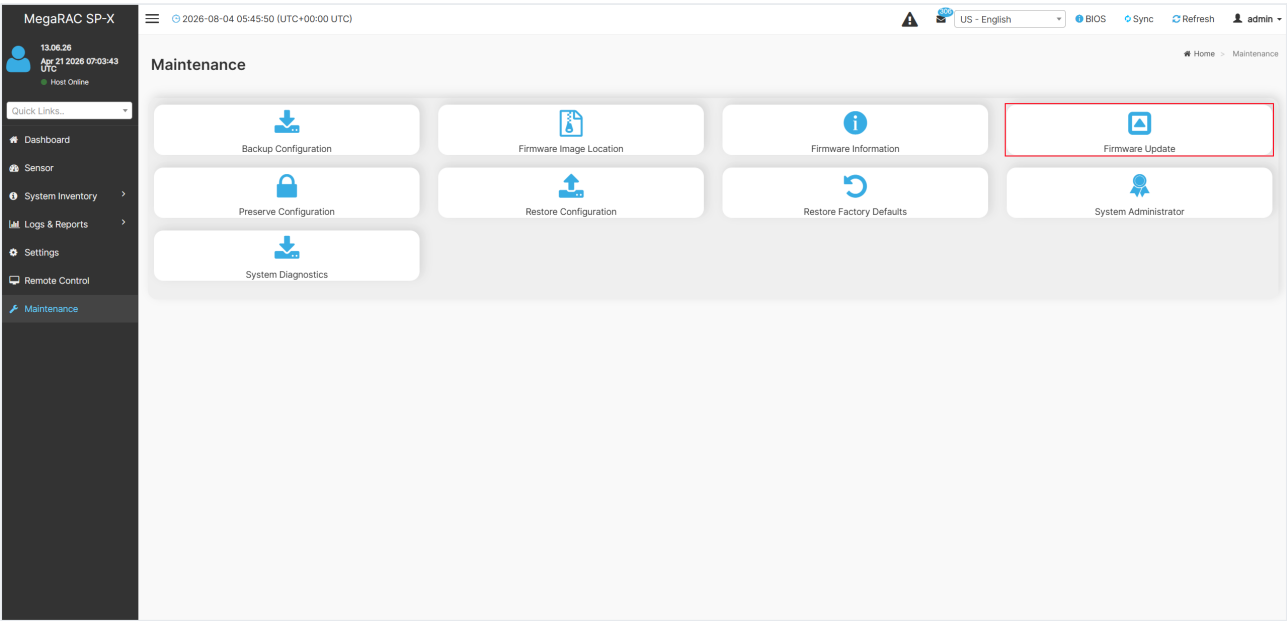


Figure 30

3. Click **Dump BIOS. Then click the folder icon and select the correct BIOS update file (**important:** the file extension must be .RBU).**

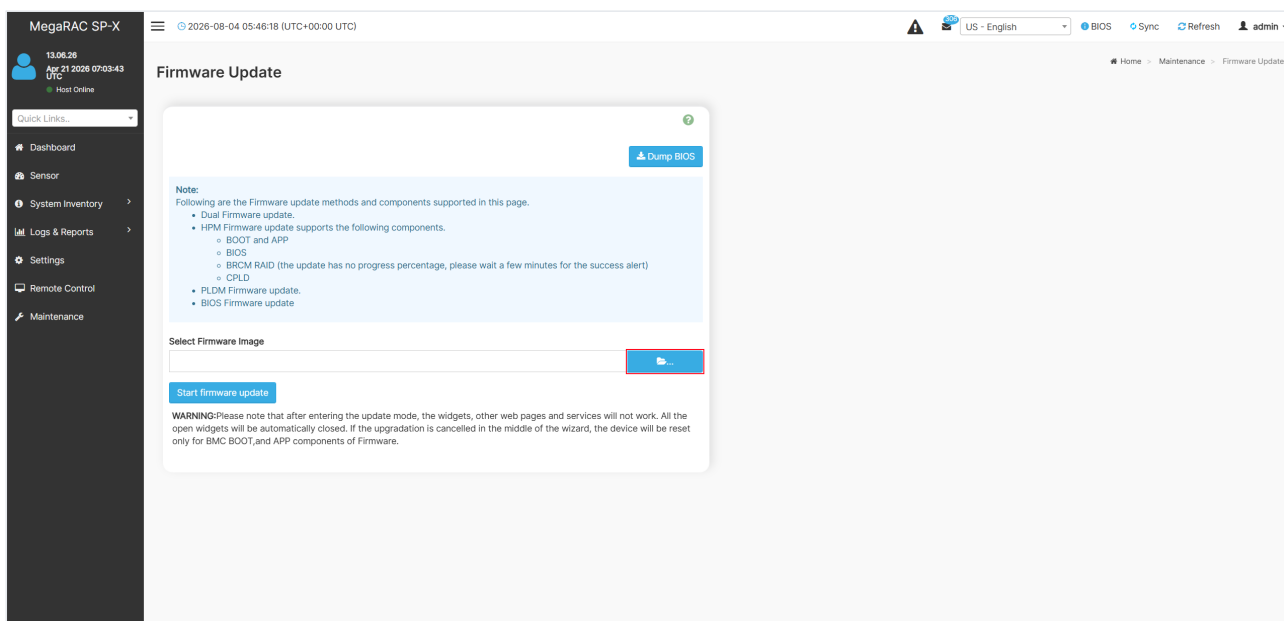


Figure 31

4. Check that the .RBU file is selected, then click **Start firmware update.**

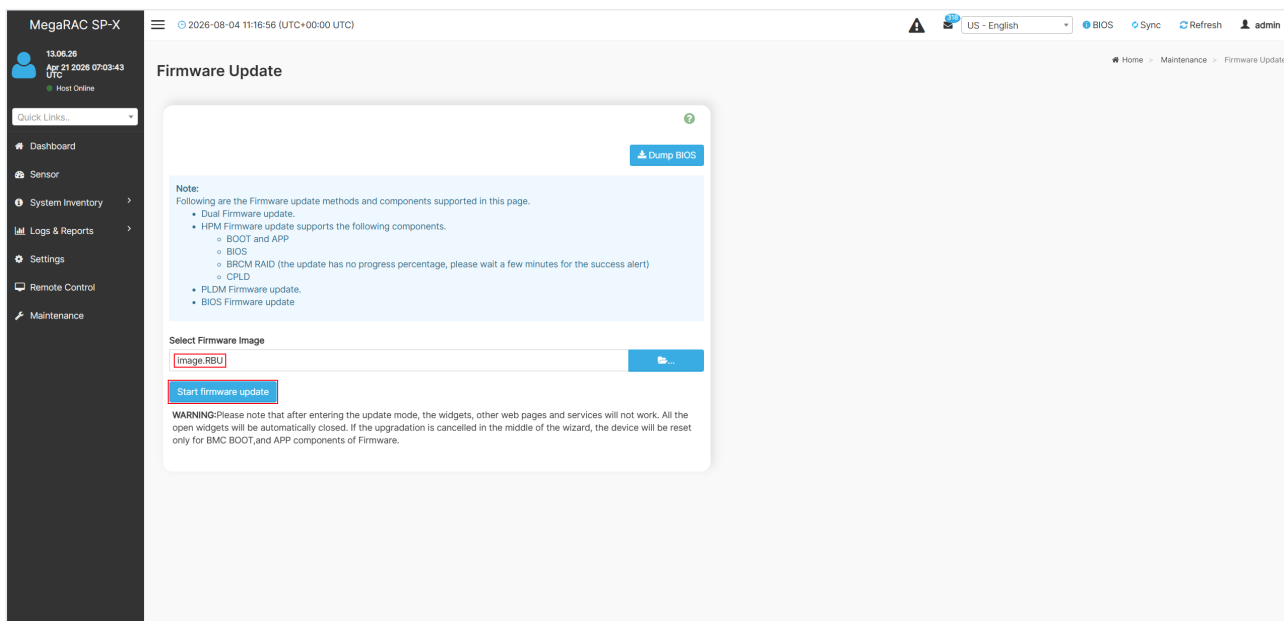


Figure 32

5. To keep all configurations, tick the **Preserve all Configuration** checkbox.

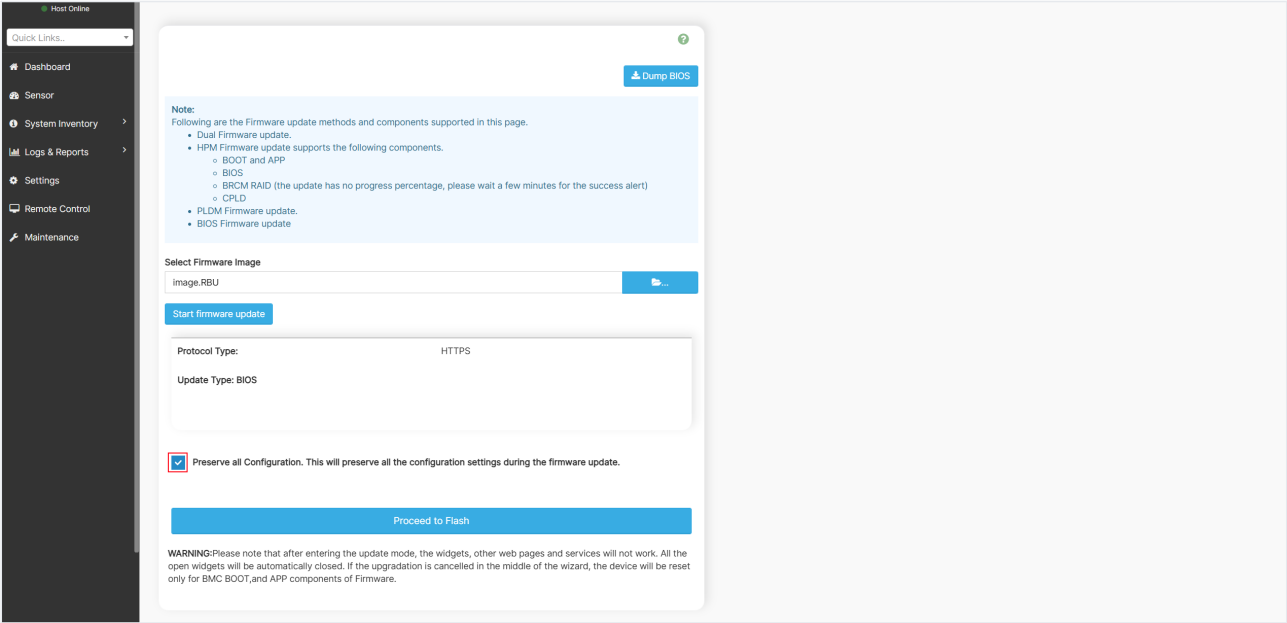


Figure 33

6. You can then click **Proceed to Flash**. An **Update Firmware** window should appear and the update will run.

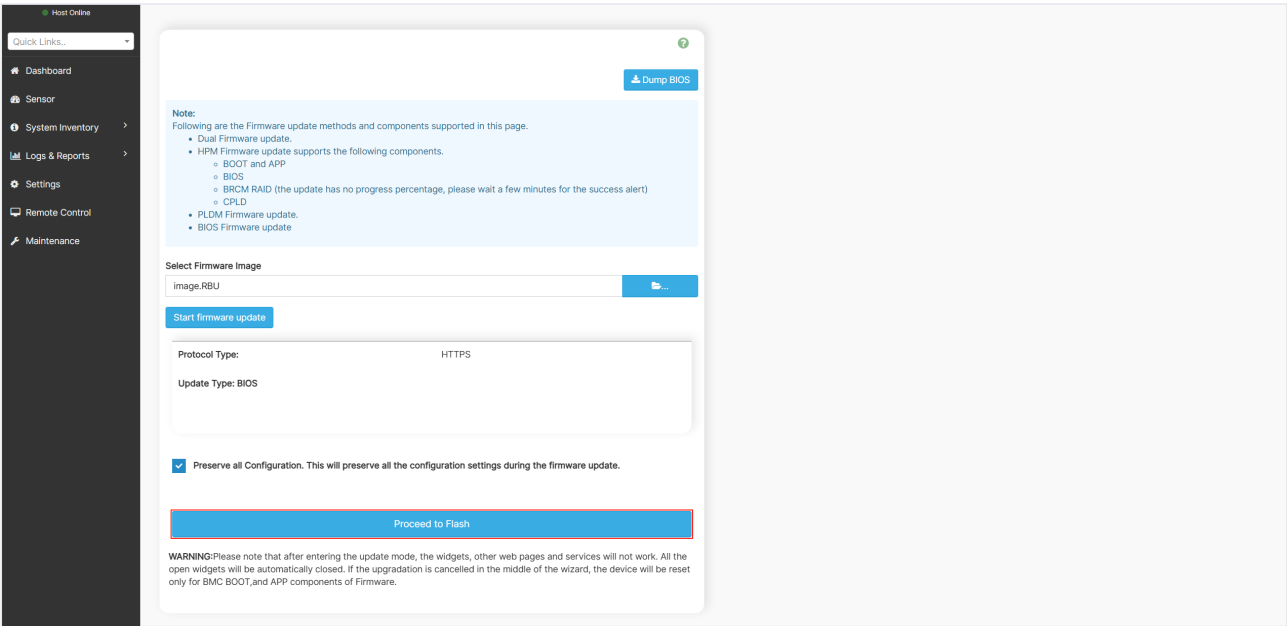


Figure 34

7. Once the update is completed, click **OK**. **Caution:** as soon as you click OK, the server restarts.

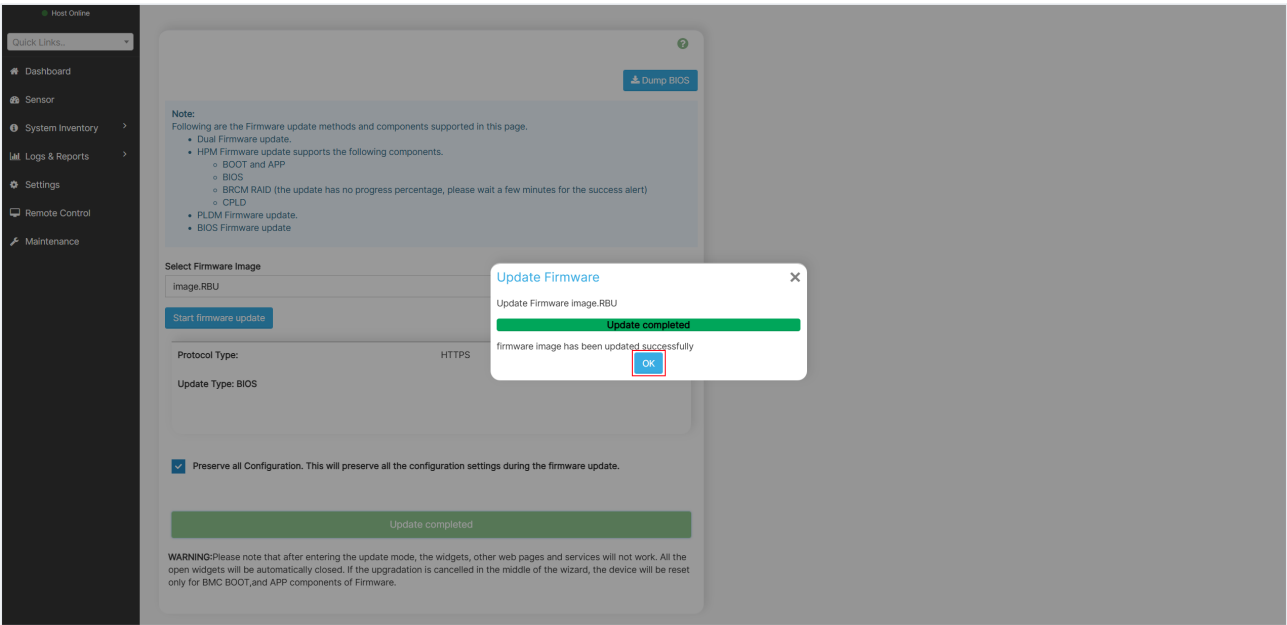


Figure 35

8. After the server has restarted, you can log in to the IPMI again and check the BIOS version.

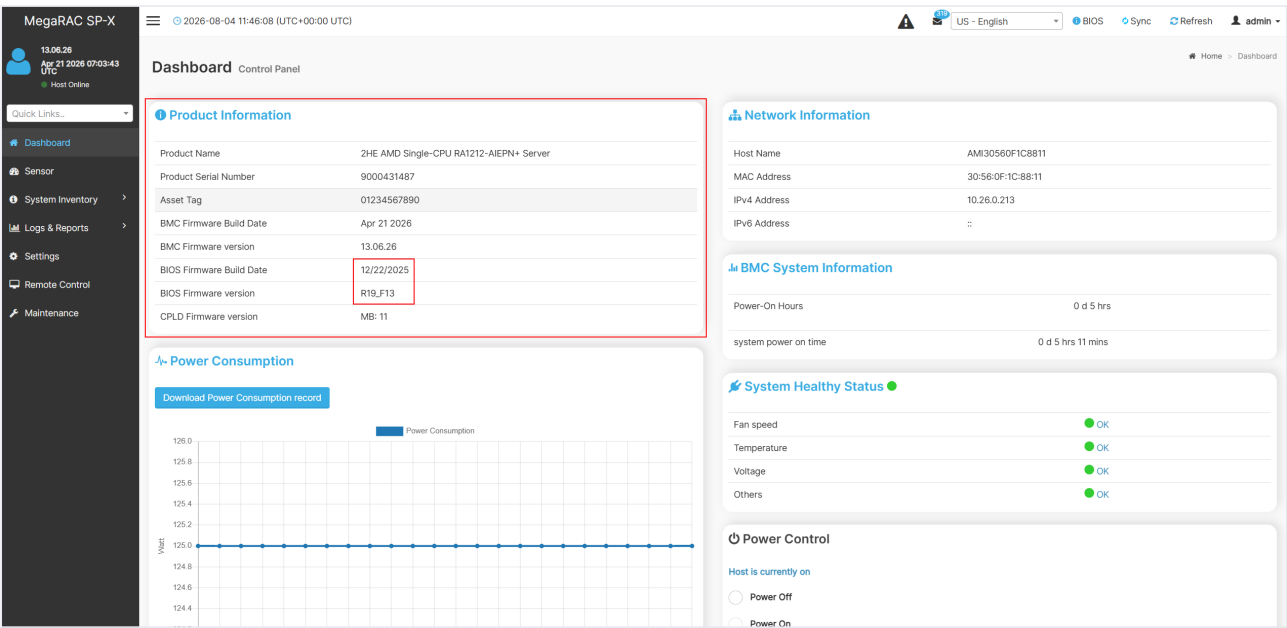


Figure 36

About the authors



Philipp Resch

Philipp Resch is an apprentice in the Product Management team at Thomas-Krenn.AG. He completed his secondary school certificate at the Realschule Hauzenberg and is training as an IT specialist for system integration at Thomas-Krenn.AG. During his apprenticeship he works mainly with Proxmox VE and Veeam.



Paul Streifinger

Paul Streifinger works as an apprentice in the Product Management team at Thomas-Krenn. He completed his secondary school certificate at the Realschule Freyung and is training as an IT specialist for system integration at Thomas-Krenn.AG. During his apprenticeship he works with Proxmox VE (including Ceph and Backup) and with VMware.

Source: Thomas-Krenn-Wiki – "Thomas-Krenn & Veeam Hardened Repository Hardware Setup" (thomas-krenn.com). This document is an English translation of the German wiki article; all screenshots are taken from the original article.