HPM-621

Software User's Manual

Nov 2021

Part No.XXXXXXXXXXXX

Content

1 Firmware update

HPM-621

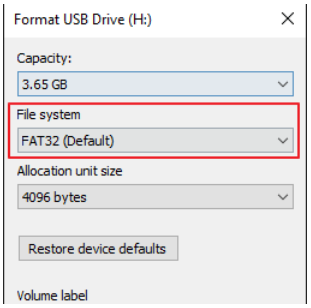
If necessary, the system firmware can be updated at local machine or remote console. Please refer the following instructions.

1.1 BIOS + SPS

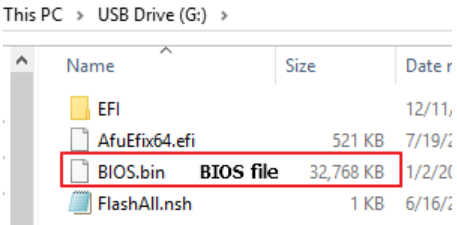
Update Method	OS	Tool and Jumper settings
Local Update	UEFI environment	AfuEfix64.efi **Need to disable SPS by JME1 jumper.**
	Windows PE environment	AFUWINx64.EXE **Need to disable SPS by JME1 jumper.**
Remote update	IPMI command	Yafuflash.exe **No need to disable SPS.**
	IPMI Web UI	No tool required **No need to disable SPS.**

1.1.1 BIOS + SPS update in UEFI environment

1. Format a USB flash drive to FAT32.

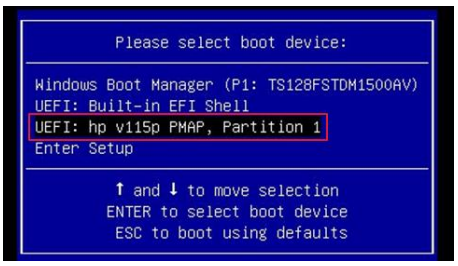


2. Download the update tool and BIOS file(xxx.bin), then save at the **root** directdory of the USB drive.



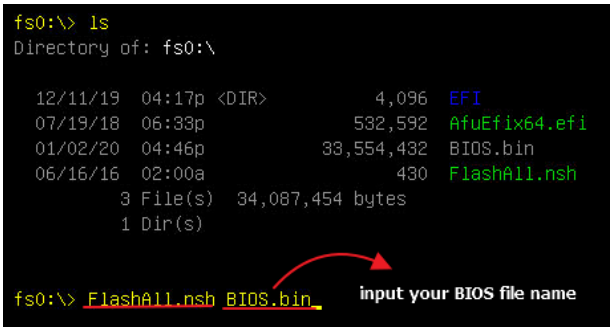
3. Plug the USB drive to the Server and close pin 2-3 of JME1.

4. Power on system. When you hear BIOS ready beep, perss **F11** to enter boot menu and select the USB drive to boot.

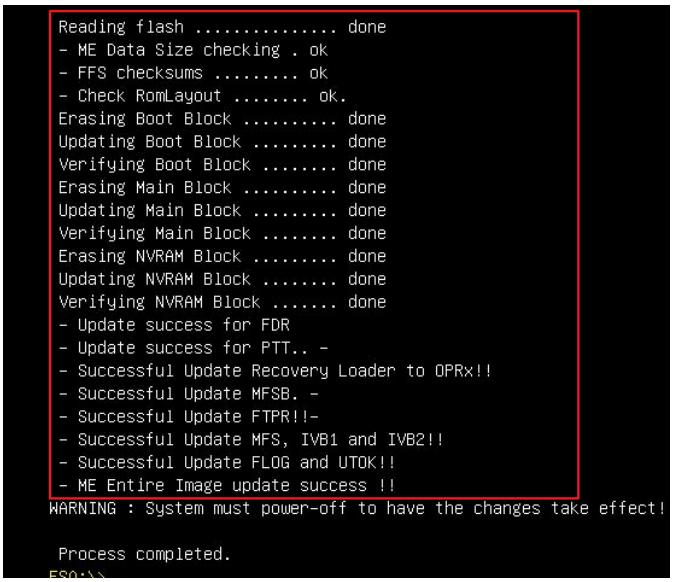


5. Type **fs*:** to enter the USB drive, for example **fs0:**.

6. Type **FlashAll.nsh [BIOS file name]** to update BIOS.



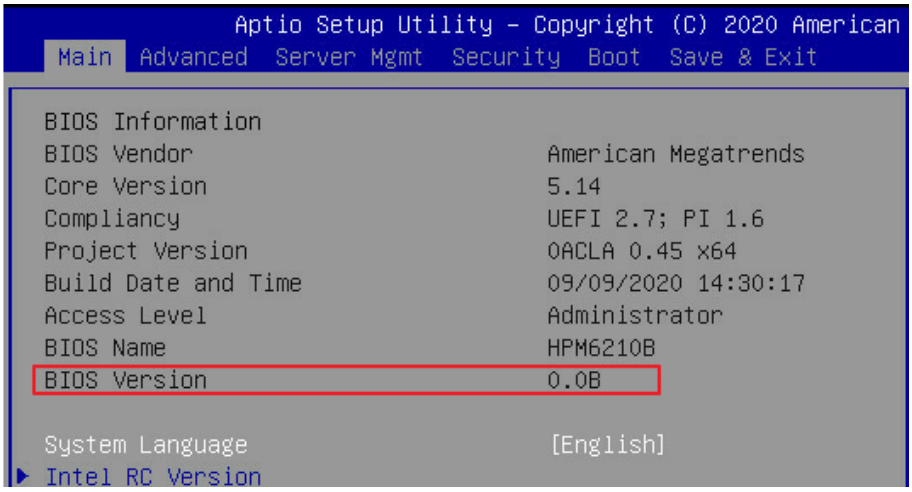
7. When the process ends, make sure all regions are done successfully without any error.



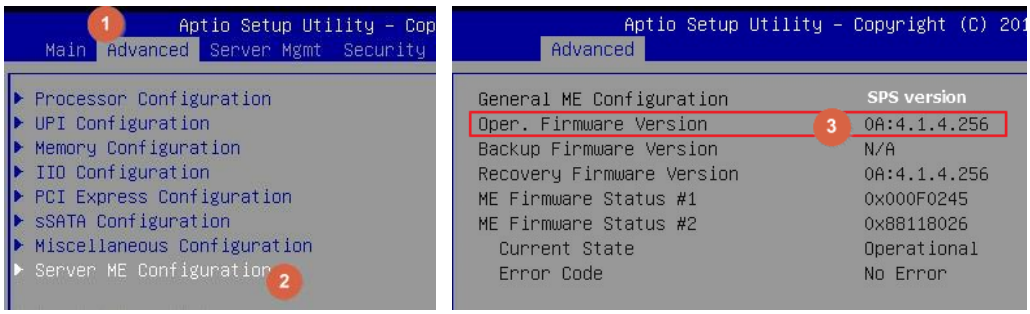
8. Remove AC power and move **JME1** jumper back to pin 1-2.

9. Power on, then boot to BIOS to check if BIOS version and SPS version are correct.

   BIOS version:

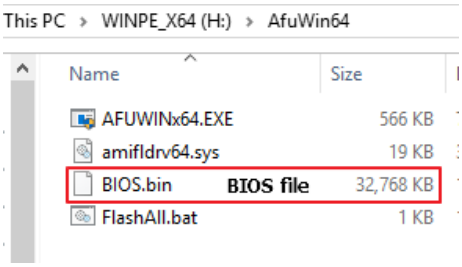


   SPS version:



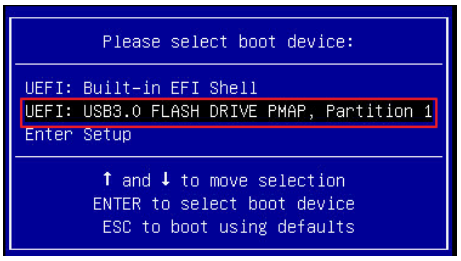
1.1.2 BIOS + SPS update in Windows PE environment

1. Copy update tool and BIOS file(xxx.bin) to WinPE disk.



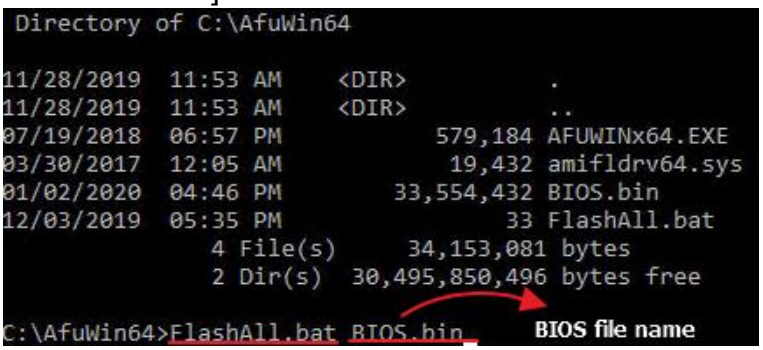
2. Plug the WinPE disk to server and close pin 2-3 of **JME1**.

3. Power on system. When you hear BIOS ready beep, press **F11** to enter boot menu and select the WinPE disk.

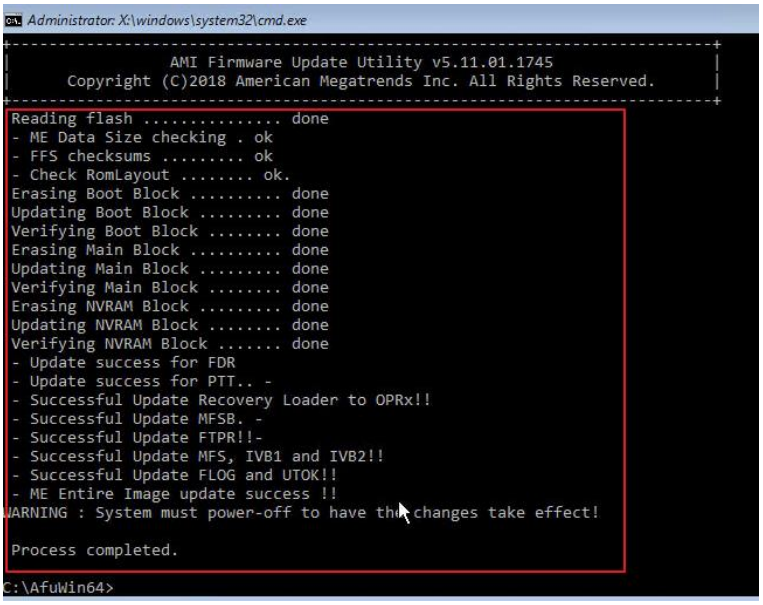


4. Switch to BIOS folder and run the command.

FlashAll.bat [**BIOS file name**]



5. When the process ends, make sure all regions are done successfully without any error.

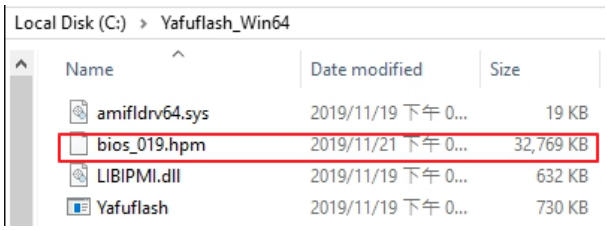


6. Remove AC power and move **JME1** jumper back to pin 1-2.

7. Refer 1.1.1 step9 to check the BIOS and SPS version.

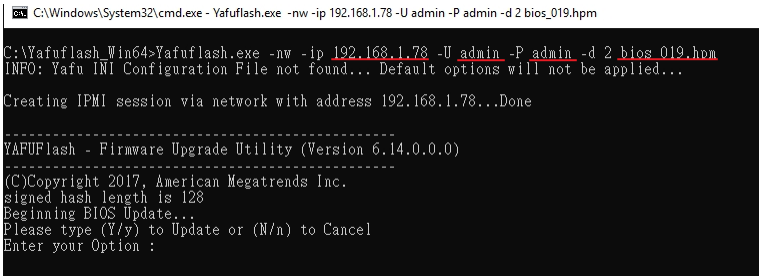
1.1.3 BIOS + SPS update using IPMI command

1. Copy BIOS file(xxx.hpm) to Yafuflash tool folder

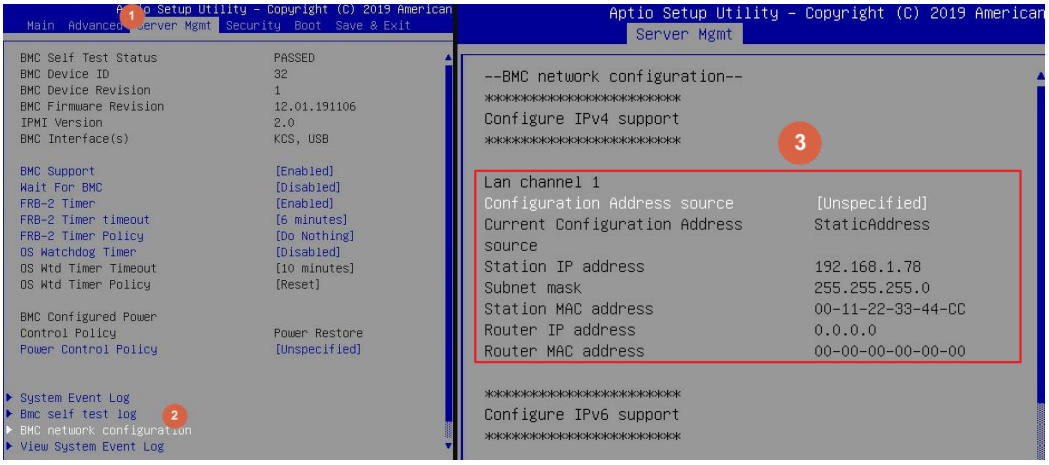


2. Open Command Prompt (admin) and change directory to Yafuflash tool folder.

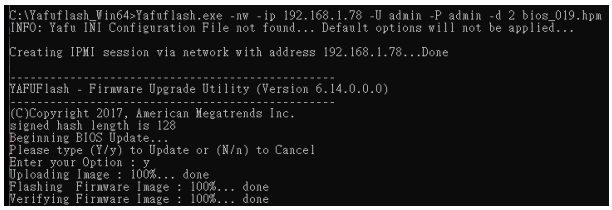
3. Input the command:
Yafuflash.exe -nw -ip [BMC IP address] -U [user name] -P [user password] -d 2 [BIOS file name]. The default username and password are admin/admin.



Note: BMC IP address can be configured at BIOS menu.



4. When the process ends, turn off AC power for 10 seconds.

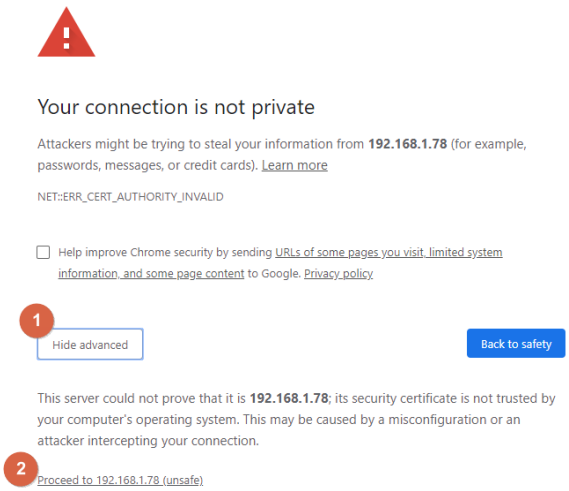


5. Refer 1.1.1 step9 to check the BIOS and SPS version.

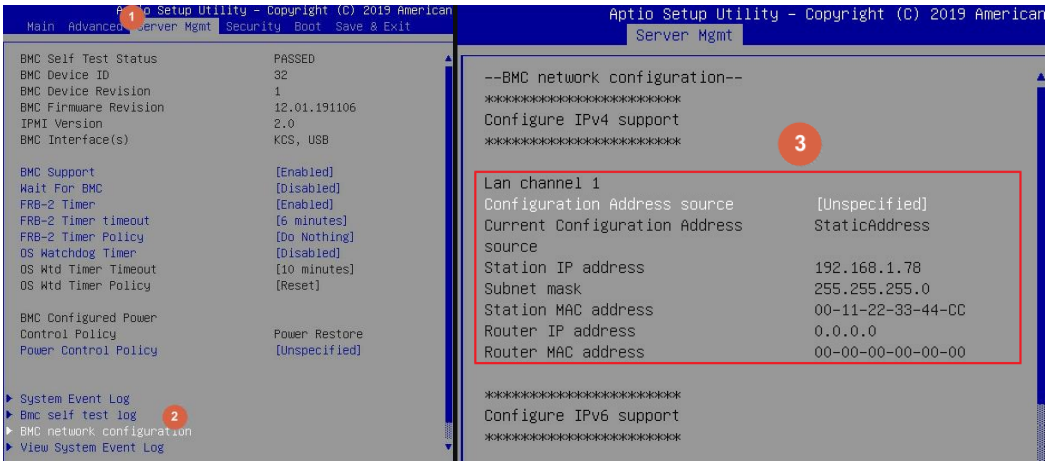
1.1.4 BIOS + SPS update using IPMI Web UI

1. Open web browser. Enter BMC IP address and log in. The default username and password are admin/admin.

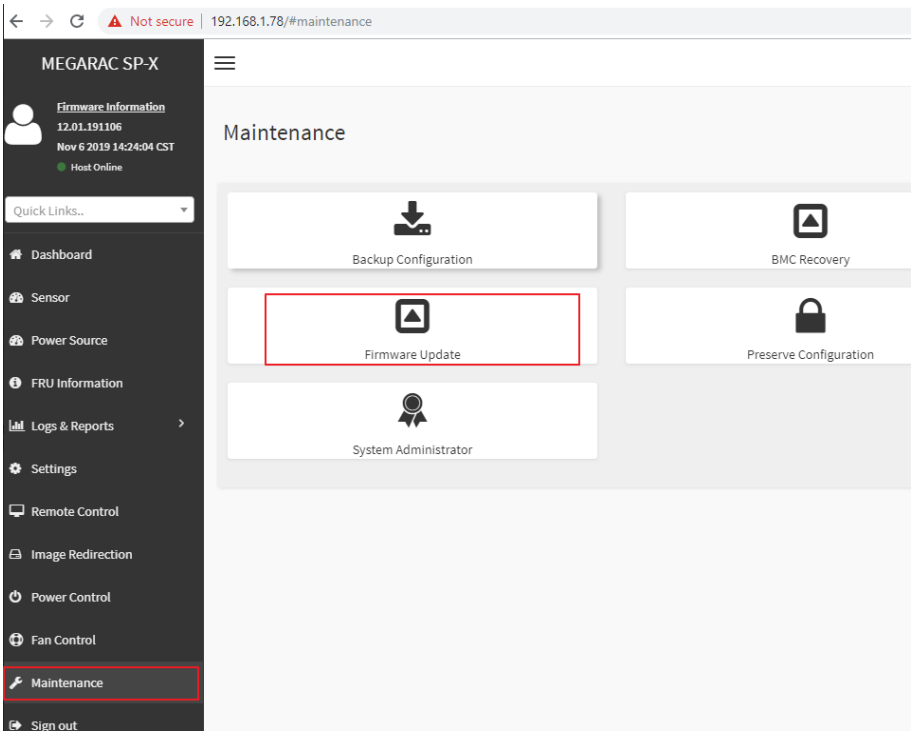
If you get a message that says "**Your connection is not private**", just skip it.



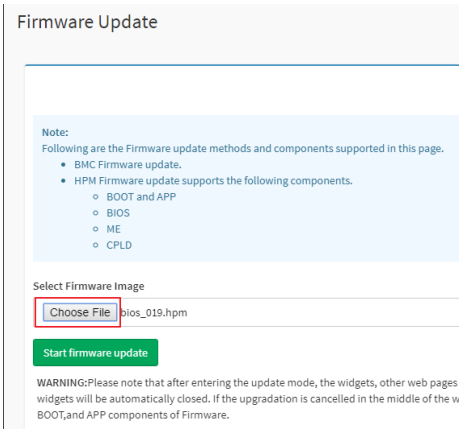
Note: BMC IP address can be configured at BIOS menu.



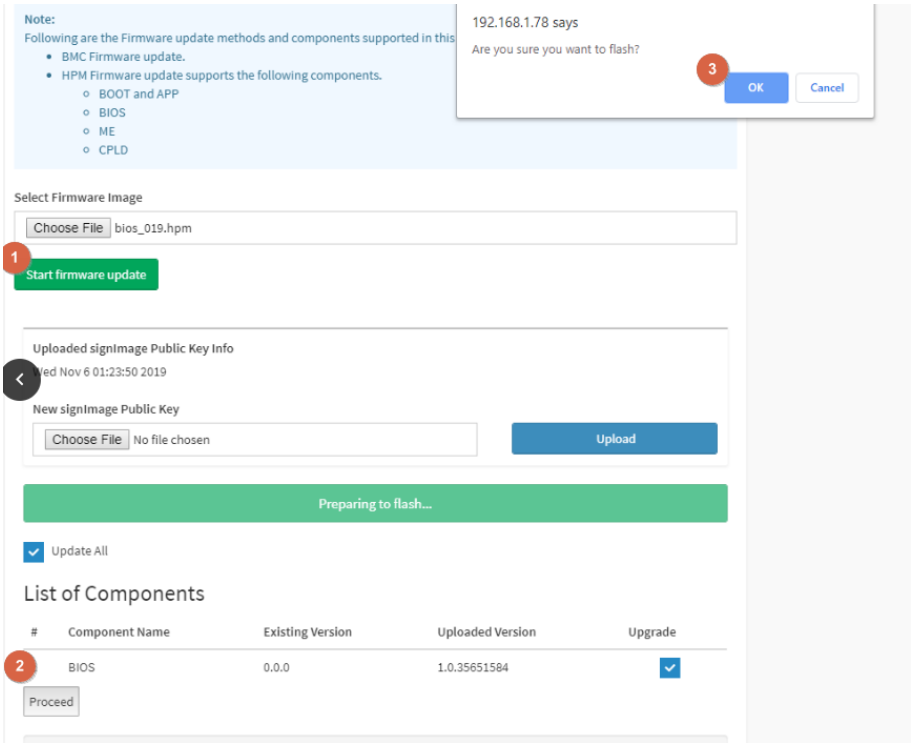
2. Click the **Maintenance** tab, then **Firmware Upate**.



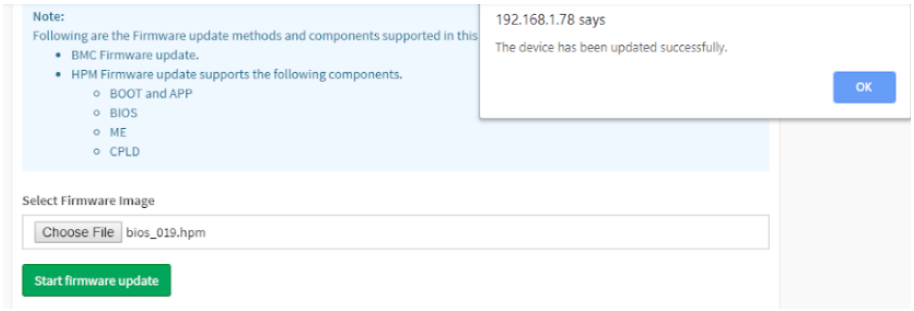
3. **Choose File** to select BIOS file(xxx.hpm).



4. Click the **Start firmware update** button, then **Proceed**. The message appears, “Are you sure you want to flash?”. Click **OK**.



5. The message appears, “The device has been updated successfully.”. Click **OK**.



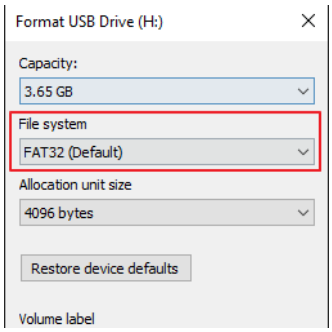
6. Server will reset after few seconds, refer 1.1.1 step9 to check the BIOS and SPS version.

1.2 BIOS

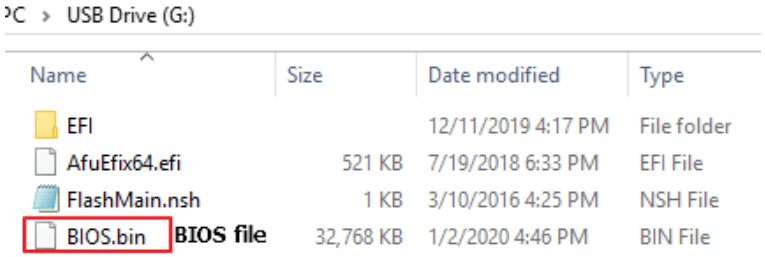
Update Method	OS	Tool
Local Update	UEFI environment	AfuEfix64.efi
	Windows PE environment	AFUWINx64.EXE

~~1.1.5~~1.2.1 BIOS update in UEFI environment

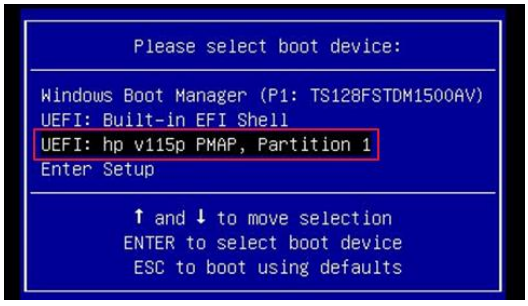
1. Format a USB flash drive to FAT32.



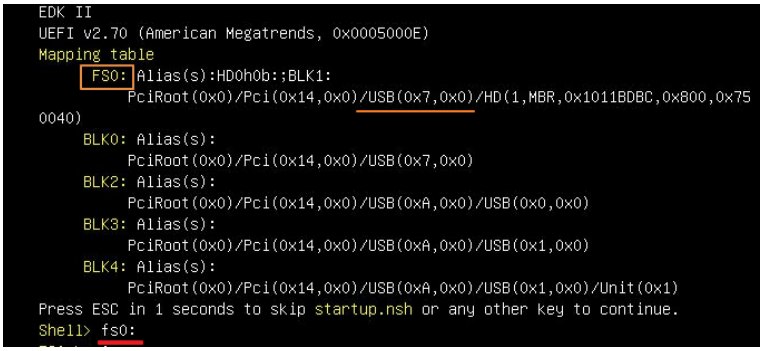
2. Download the tool and BOIS file(xxx.bin) and save at the **root** directdory of the USB drive.



3. Power on system. When you hear BIOS ready beep, perss **F11** to enter boot menu and select the USB drive to boot.

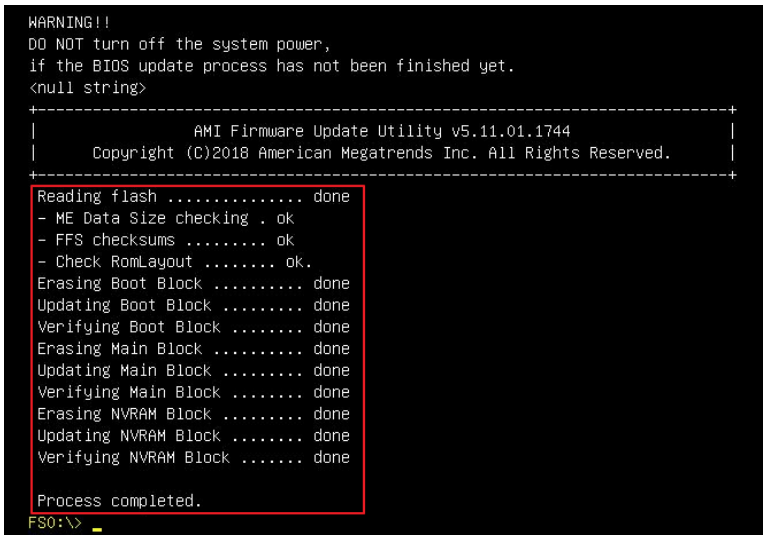


4. Type **fs*:** to enter the USB drive, for example **fs0:**

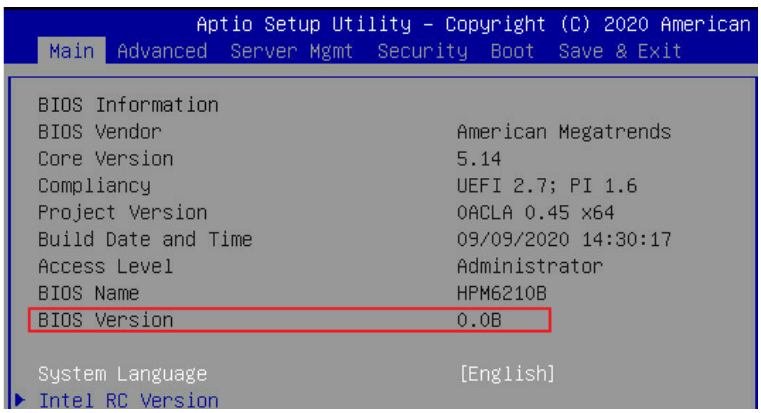


5. Type **FlashMain.nsh [BIOS file name]** to update BIOS.

6. When the process ends, make sure all regions are done successfully without any error.

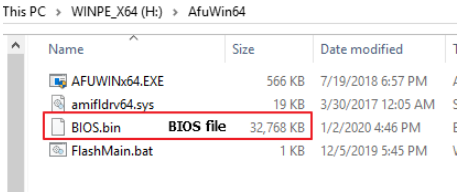


7. Reboot to BIOS to check if BIOS version is correct.

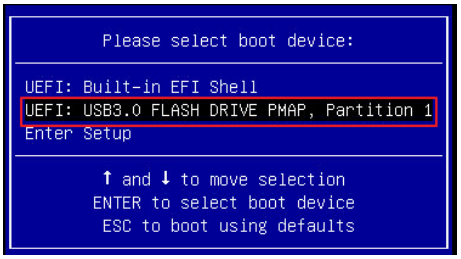


~~1.1.6~~1.2.2 BIOS update in Windows PE environment

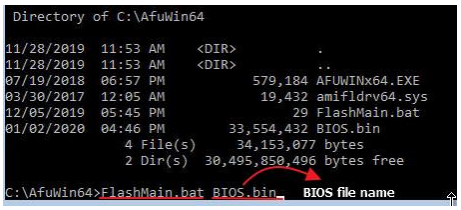
1. Copy update tool and BIOS file(xxx.bin) to WinPE disk.



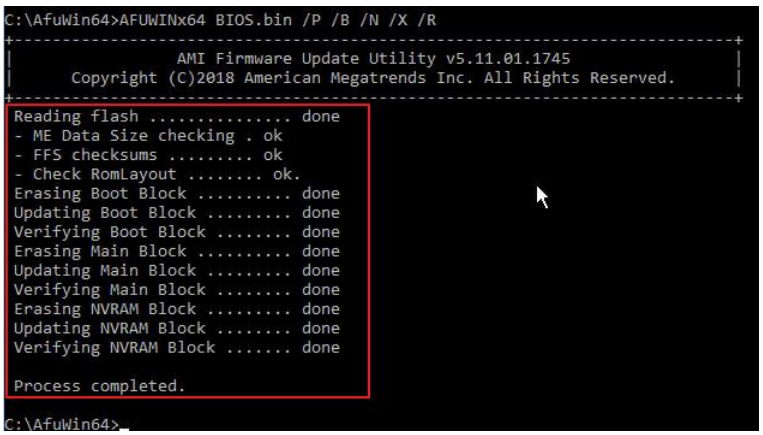
2. Power on Server. When you hear BIOS ready beep, press **F11** to enter boot menu and select the WinPE disk.



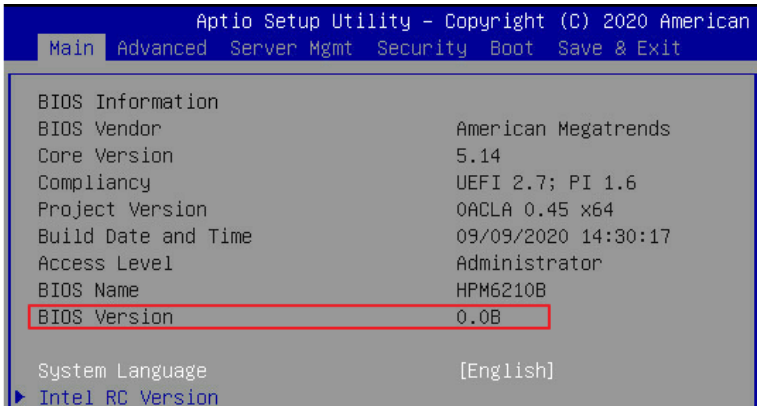
3. Switch to BIOS folder and run the command.
FlashMain.bat [**BIOS file name**]



4. When the process ends, make sure all regions are done successfully without any error.



5. Reboot to BIOS to check if BIOS version is correct.



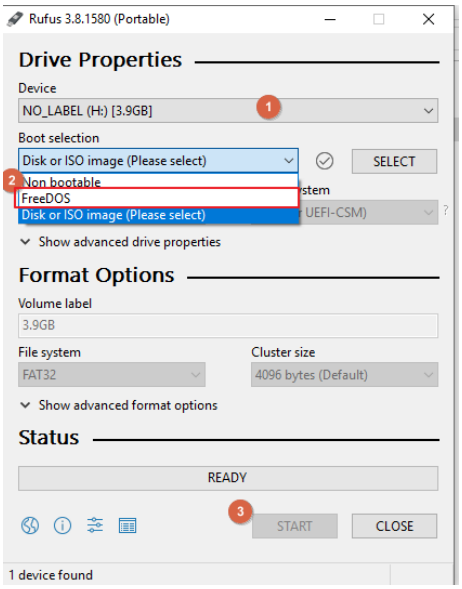
1.3 BMC

Update Method	OS	Tool
Local Update	DOS environment	Yafuflash.exe.
	WinPE environment	Yafuflash.exe
Remote update	IPMI Web UI	No tool required
	IPMI command	Yafuflash.exe

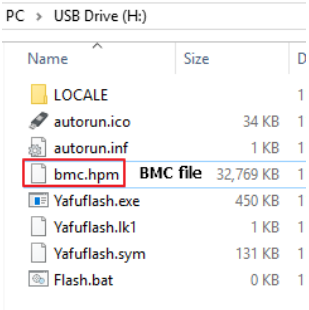
Please refer readme for tool detail information.

~~1.1.7~~1.3.1 BMC update in DOS environment

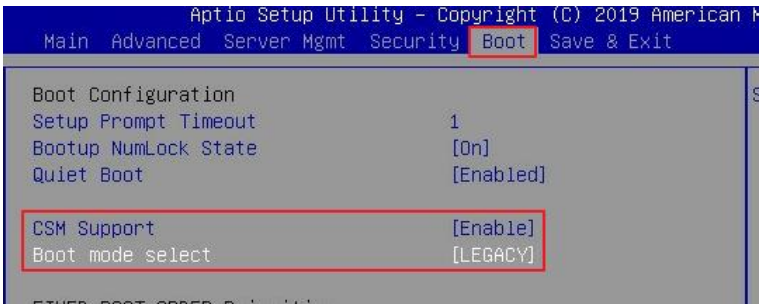
1. Download **Rufus** to create a DOS USB drive, https://rufus.ie/.



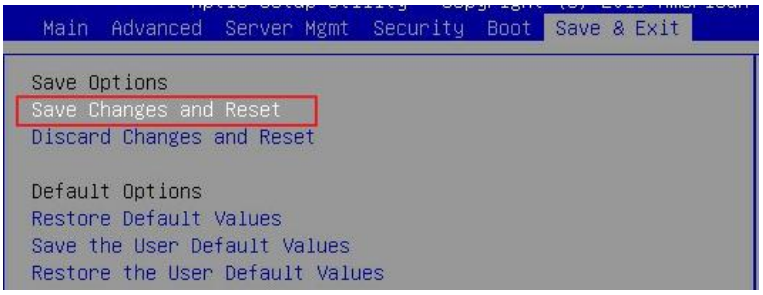
2. Save BMC file to **root** dictory of the DOS USB drive.



3. Plug the USB drive to the Server and boot to BIOS setup. Switch to **Boot** tab and change **CSM Support** to [**Enable**], **Boot mode select** to [**LEGACY**].

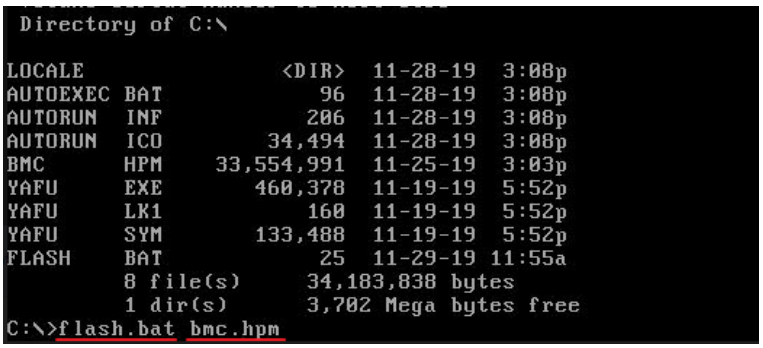


Switch to **Save & Exit** tab and then **Save changes and Reset**.

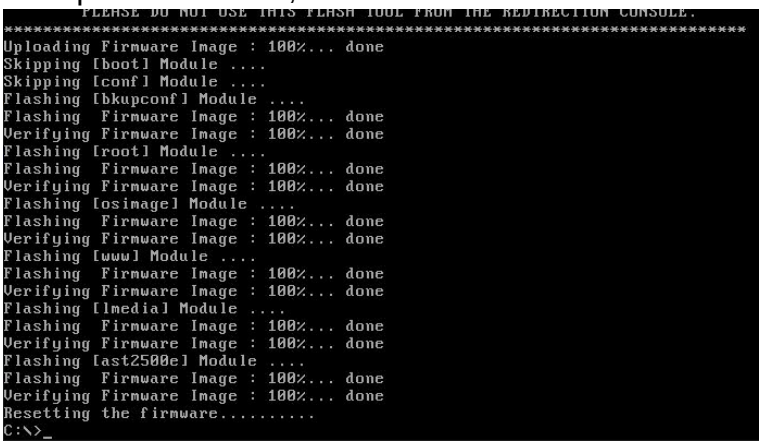


4. When you hear BIOS ready beep, press **F11**, and select the DOS USB drive to boot.

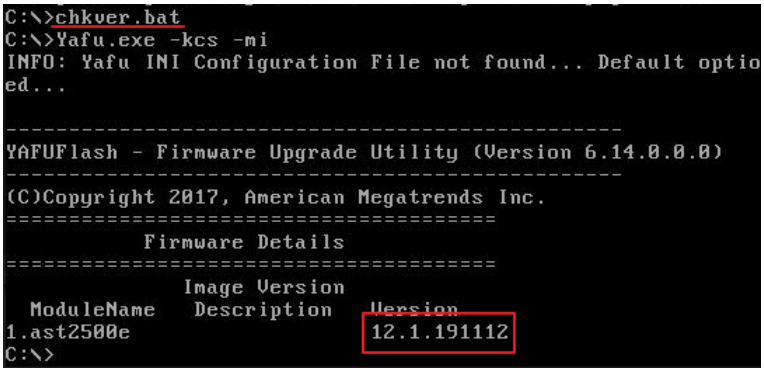
5. Input **flash.bat** [**BMC file name**] and press enter. Please wait. This process may take 40 minutes.



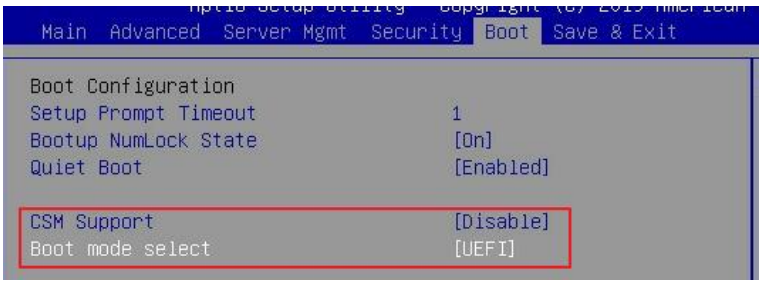
6. When the update process finishs, BMC will reset.



7. After BMC reset, run **chkver.bat** to check BMC firmware version.



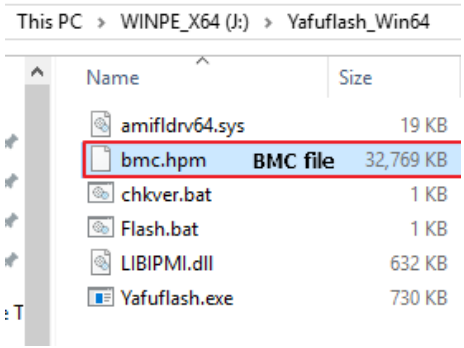
8. Reboot to BIOS and restore the **CSM support** and **Boot mode select** settings.



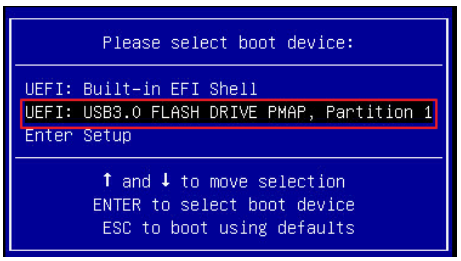
Save changes and exit.

~~1.1.8~~1.3.2 BMC update in WinPE environment

1. Copy update tool and BMC file to WinPE disk.

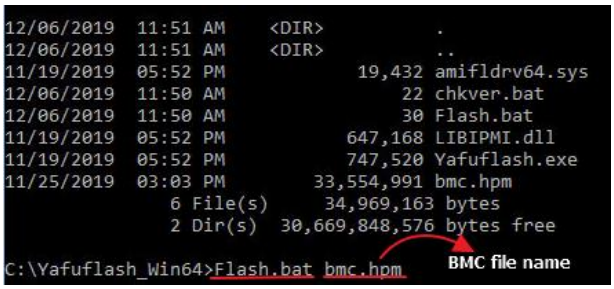


2. Plug the WinPE disk to the Server and power on. When you hear BIOS ready beep, press **F11** to enter boot menu and select the WinPE disk to boot.



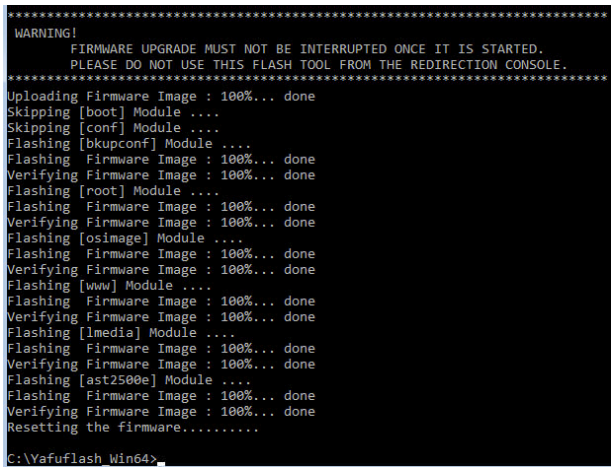
3. Switch to the ipmi tool folder and run the command.

Flash.bat [**BMC file**]

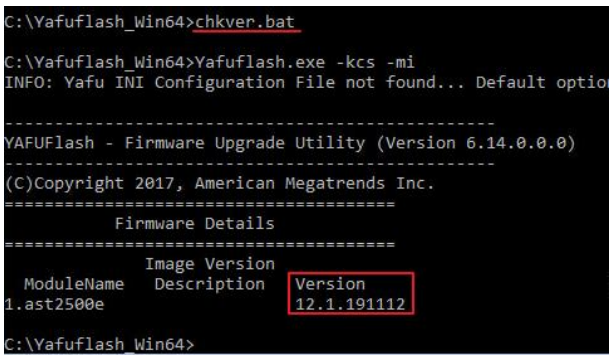


Please wait. This may take few minutes.

4. When the update process finishs, BMC will reset.



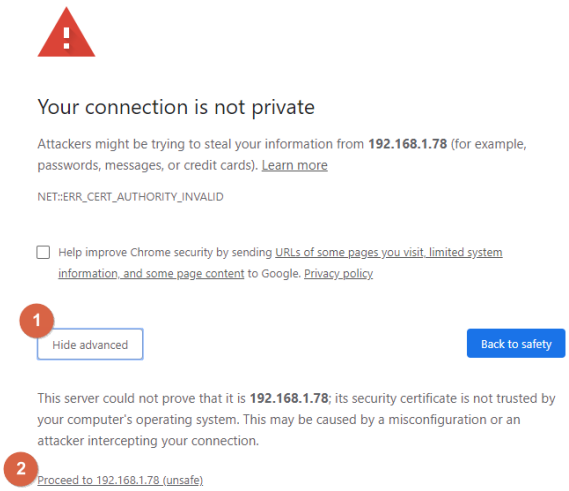
5. After BMC reset, run **chkver.bat** to check BMC firmware version.



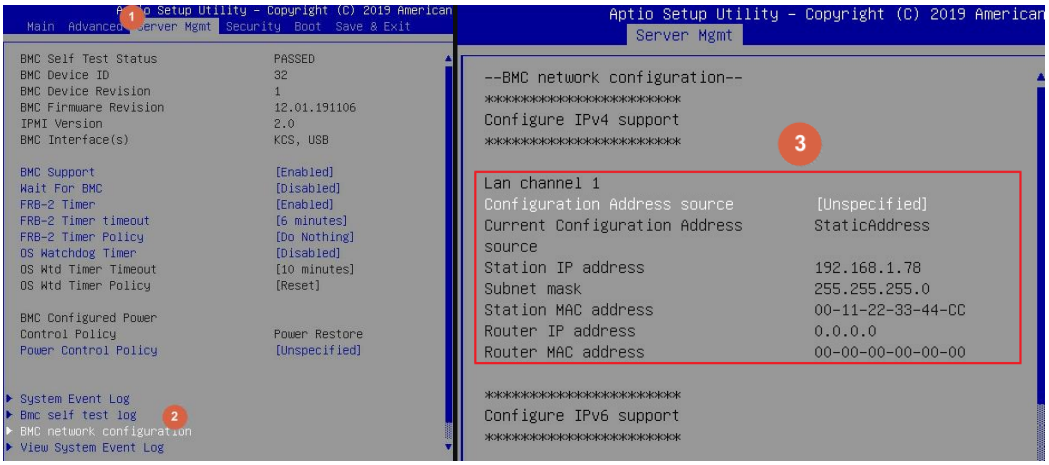
~~1.1.9~~1.3.3 BMC update using Web UI

1. Open web browser. Enter BMC IP address and log in. The default user name and password are admin/admin.

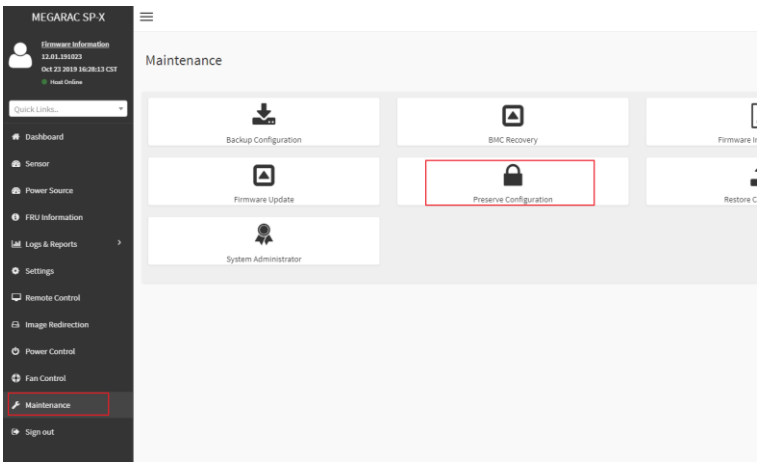
If you get a message that says “**Your connection is not private”**, just skip it.



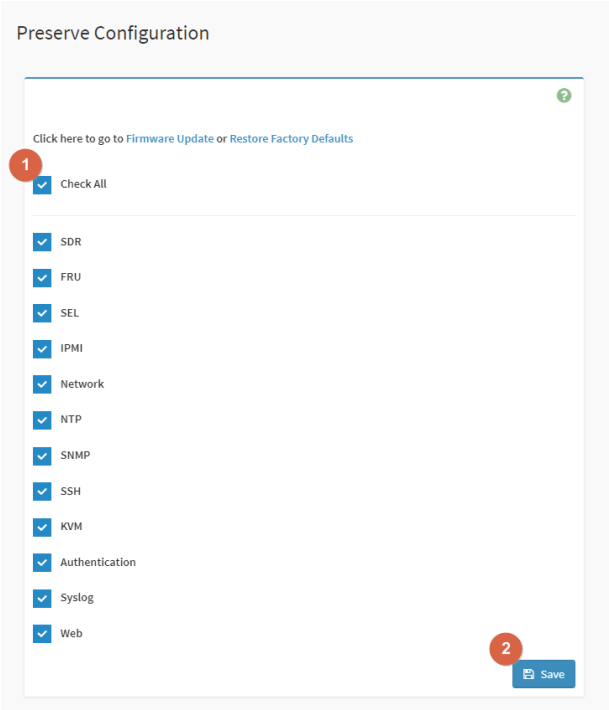
Note: BMC IP address can be configured at BIOS menu.



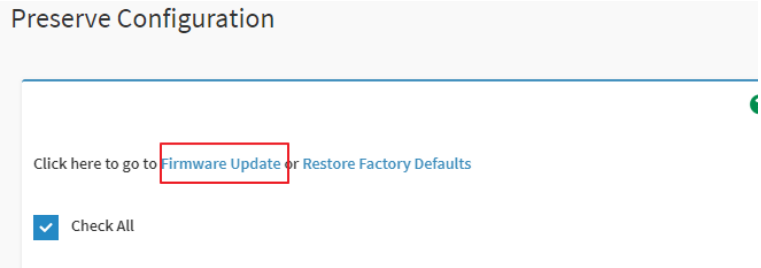
2. Click the **Maintenance** tab, then **Preserve Configuration.**



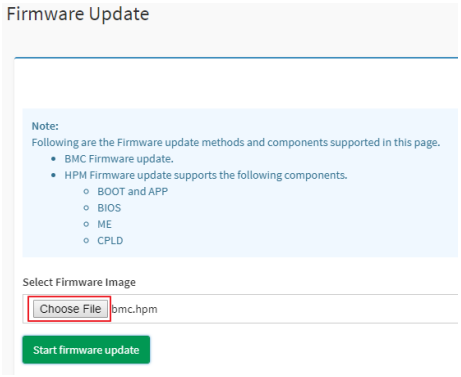
Check all and **Save.**



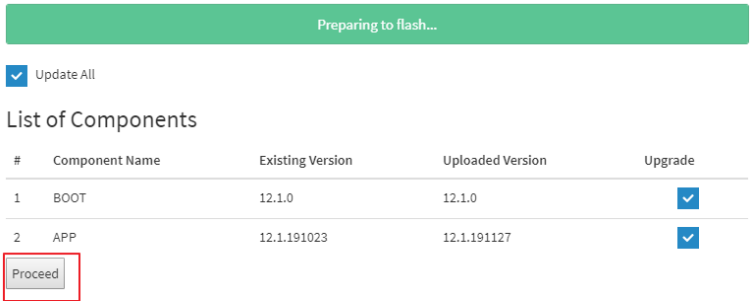
3. Click the link to go to **Firmware Upate**.



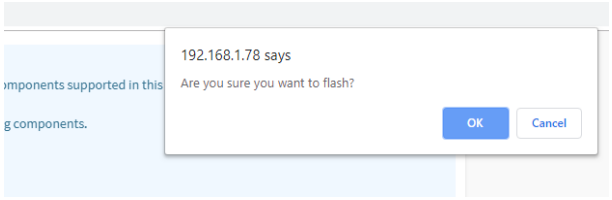
4. **Choose File** to select BMC file.



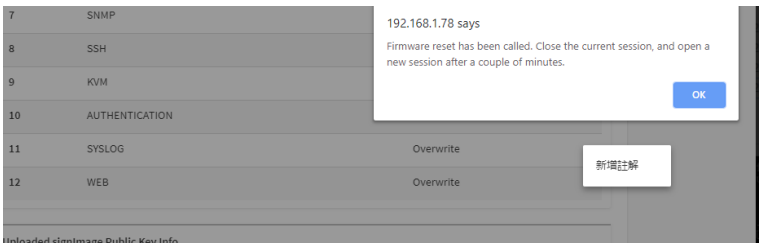
5. Click the **Start firmware update** button, then scroll down and click **Proceed**.



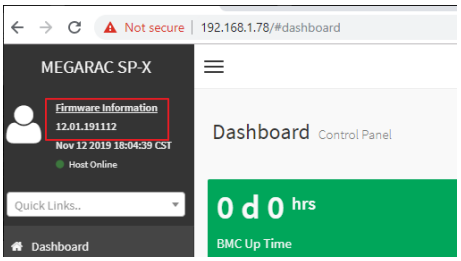
The message appears, “Are you sure you want to flash?”. Click **OK**.



6. The message appears, “Firmware reset has been called. Close this current session, and open a new session after a couple of minutes.”. Click **OK**.

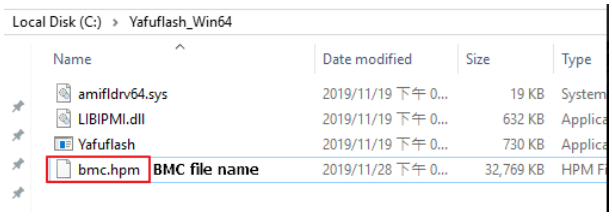


7. Reboot the server and then login to check the BMC firmware version.



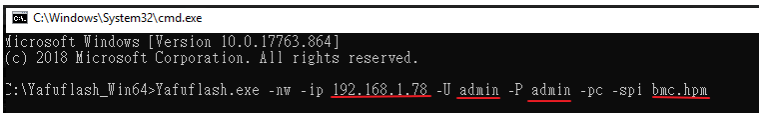
~~1.1.10~~1.3.4 BMC update using IPMI tool

1. Save **BMC** file to **Yafuflash** folder.

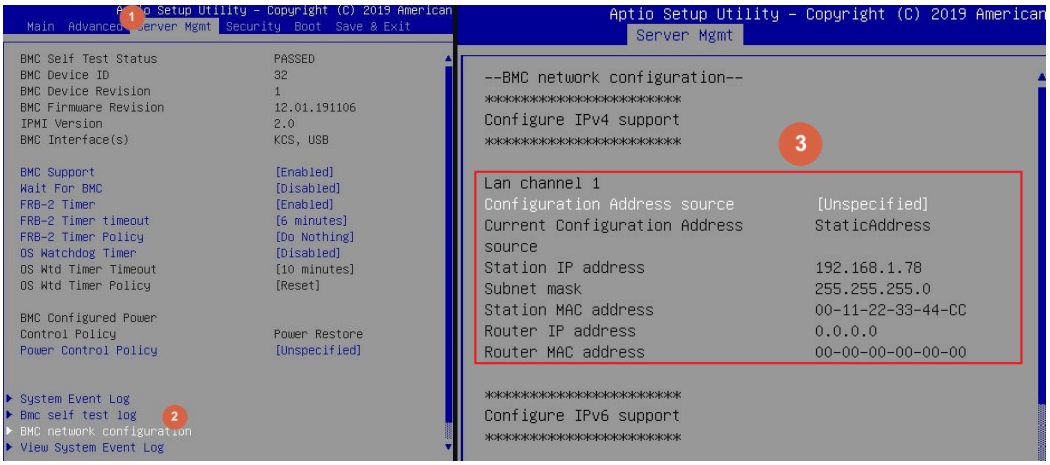


2. Open Command Prompt (admin) and change directory to Yafuflash tool folder.

3. Input the command:
   Yafuflash.exe -nw -ip [BMC IP address] -U [user name] -P [user password] -pc -spi [BMC file name]. The default username and password are admin/admin.

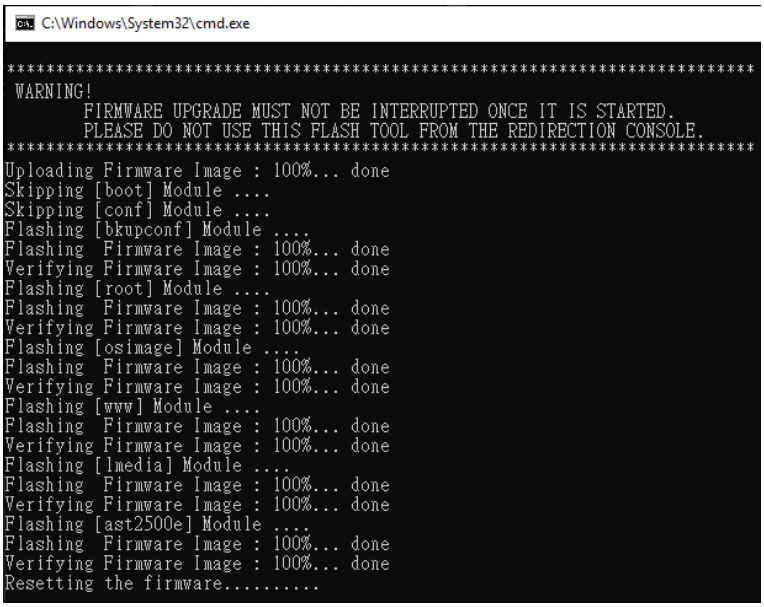


Note: BMC IP address can be configured at BIOS menu.



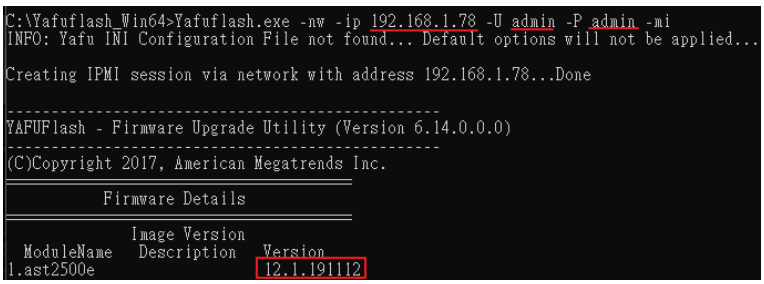
4. When the following screen shows, please wait few seconds.
The update process will start.

5. When the update process finishs, BMC will reset.



6. Reboot the server. Check BMC firmware version by following fommand.

Yafuflash.exe -nw -ip [BMC IP address] -U [user name] -P [user password] -mi



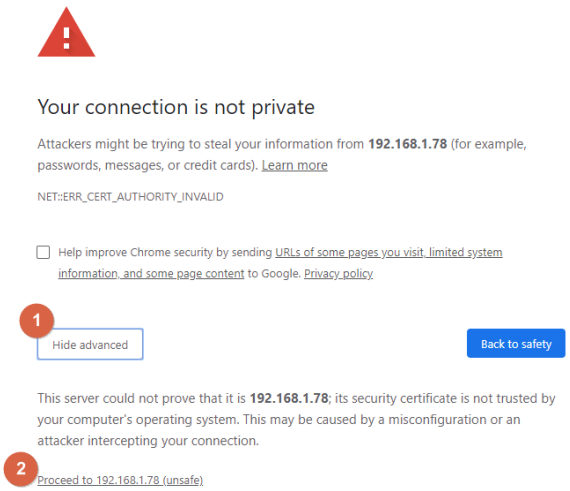
~~1.21.4~~ CPLD

Update Method	OS	Tool
Remote update	IPMI Web UI	No tool required
	IPMI command	Yafuflash.exe

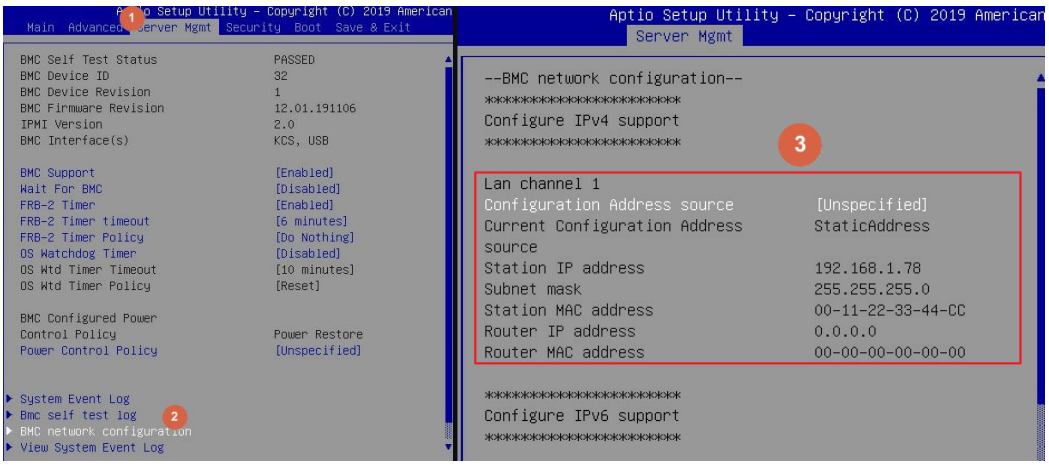
~~1.2.1~~1.4.1 CPLD update using Web UI

1. Open browser. Enter BMC IP address and log in. The default user name and password are admin/admin.

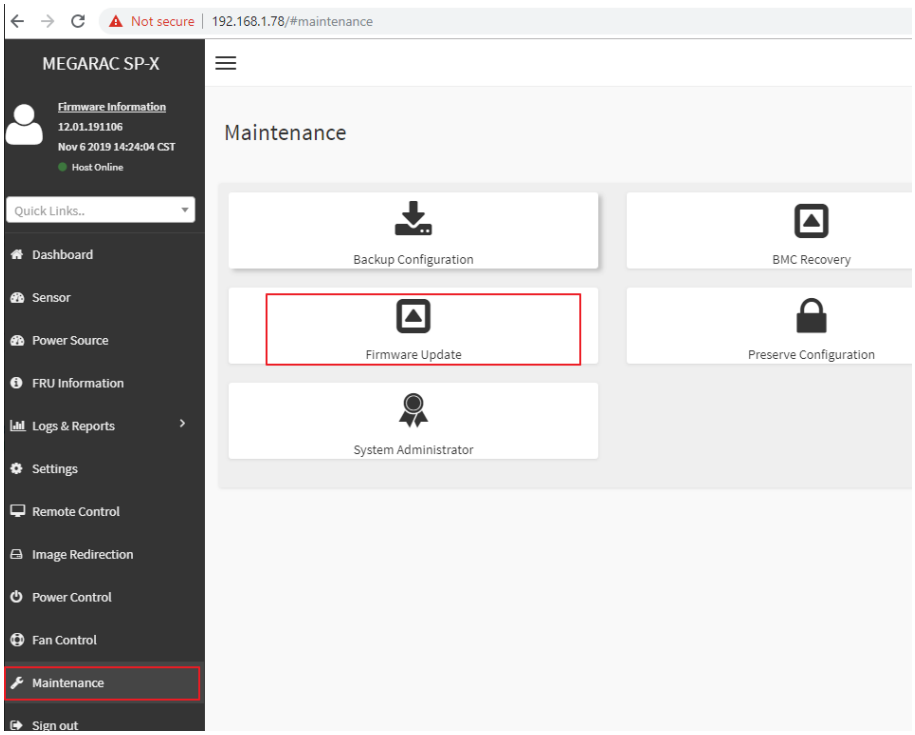
If you get a message that says "**Your connection is not private**", just skip it.



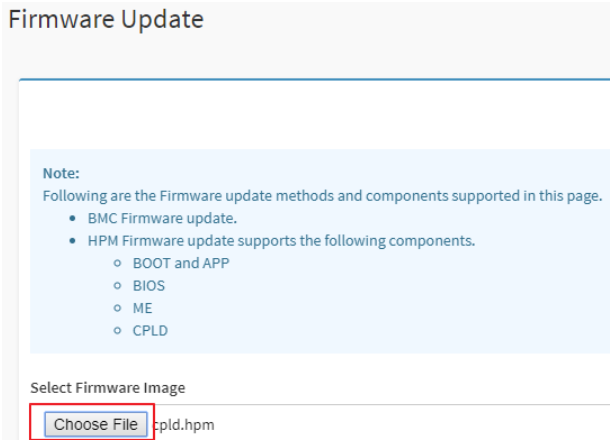
Note: BMC IP address can be configured at BIOS menu.



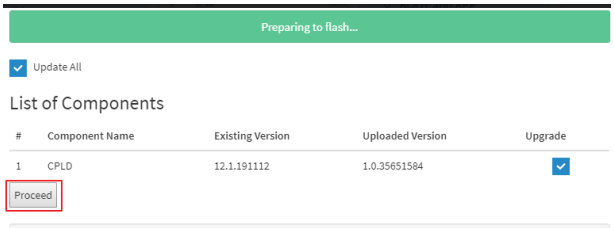
2. Click the **Maintenance** tab, then **Firmware Upate**.



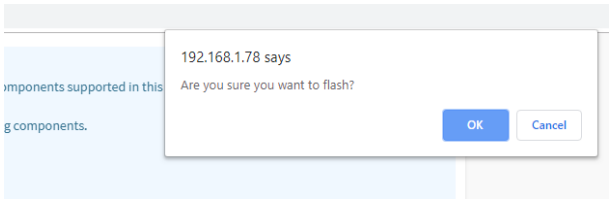
3. **Choose File** to select CPLD file.



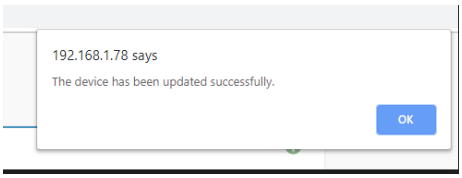
4. Click the **Start firmware update** button, then scroll down and click **Proceed**.



The message appears, "Are you sure you want to flash?". Click **OK**.



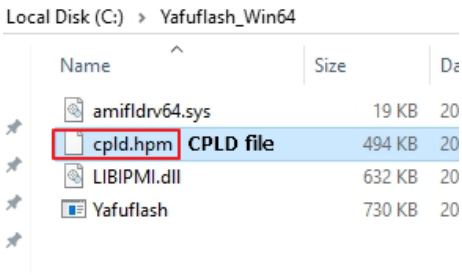
5. The message appears, "The device has been updated successfully". Click **OK**.



6. Shutdown the server and turn off AC power for 10 seconds.

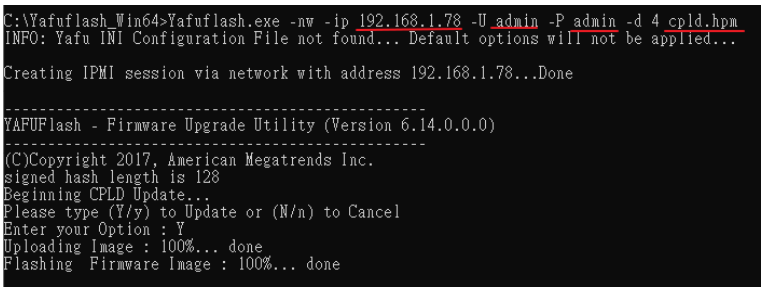
~~1.2.2~~1.4.2 CPLD update using IPMI tool

1. Save **CPLD** file to **Yafuflash** folder.

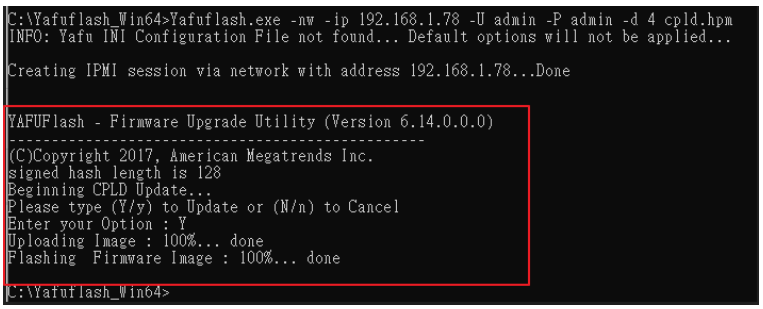


2. Open Command Prompt (admin) and change directory to Yafuflash tool folder.

3. Input the command: Yafuflash.exe -nw -ip [BMC IP address] -U [user name] -P [user password] -d 4 [CPLD file name]. The default username and password are admin/admin.



4. After the process finishing, shutdown the server and turn off AC power for 10 seconds.



2 Smart Fan Configuration

2.1 OEM Message Format

The OEM command bytes are organized according to the following format specification:

Byte 1	Byte 2	Byte 3:N
Function code	Cmd	Data

Where:

Function code **0x30** is the OEM function code, and default Privilege Level is User. If you use "**ipmiutil**" tool in Windows OS, replace "0x30" with "00 20 C0".

Cmd Command code. This message byte specifies the operation that it to be executed.

Data Zero or more bytes of data, as required by given command.

2.2 OEM Command Table

Description	Function code	Cmd	Data/Response data
Set fan mode	0x30	0x01	[Mode] 0 = standard mode 1 = full mode 2 = optimal mode 3 = manual mode
Get fan mode	0x30	0x30	The response data is the fan mode. 0 = standard mode 1 = full mode 2 = optimal mode 3 = manual mode
Set fan PWM	0x30	0x35	[Fan] [PWM] **Fan**: 0 = CPU1_FAN1 1 = CPU2_FAN1 2 = SYS_FAN1 3 = SYS_FAN2 4 = SYS_FAN3 5 = HDD_FAN1 6 = SYS_FAN4 (HPM-621UA) **PWM**: The PWM duty cycle range should be 0x1E to 0x64(30%~100%).

Get fan PWM	0x30	0x36	The response data represent each fan PWM.

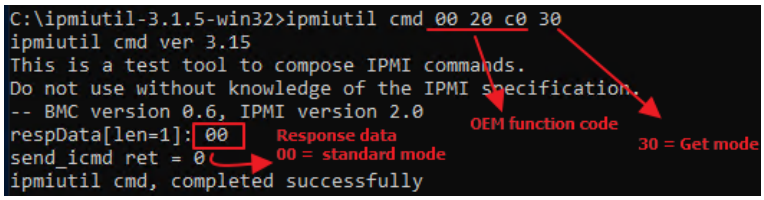
The OEM commands can be run at local or remote console. Please refer next section.

2.3 Example

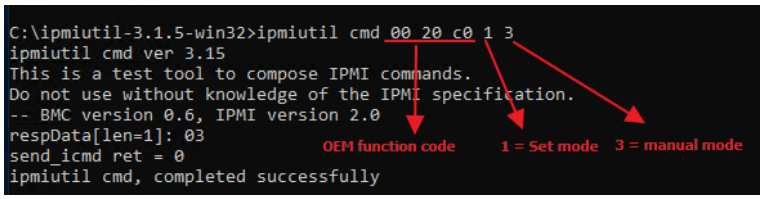
2.3.1 Locally set PWM of SYS_FAN3 to 0x20 by "ipmiutil" in Windows OS.

Step 1. Run Command Prompt as Administrator.

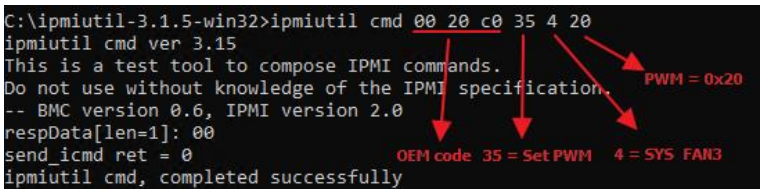
Step 2. Get fan mode



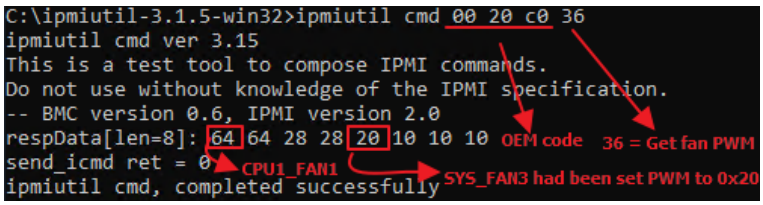
Step 3. Set fan mode to manual mode



Step 4. Set fan PWM



Step 5. Get fan PWM

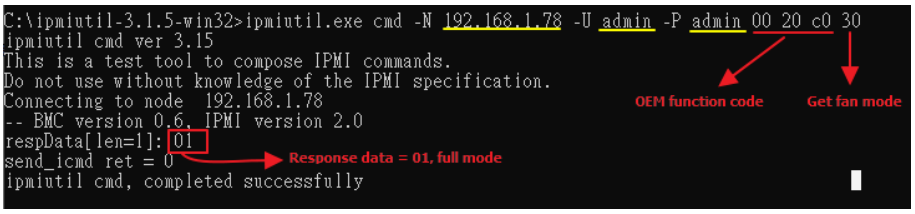


2.3.2 Remotely set PWM of CPU1_FAN1 to 0x10 by “ipmiutil” in Windows OS.

Step 1. Run Command Prompt as Administrator.

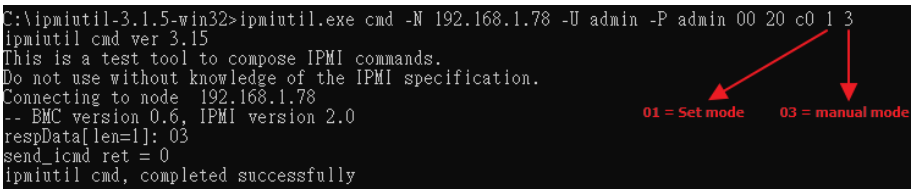
Step 2. Get fan mode

ipmiutil.exe cmd -N [BMC IP] -U [user name] -P [user password] 00 20 c0 30



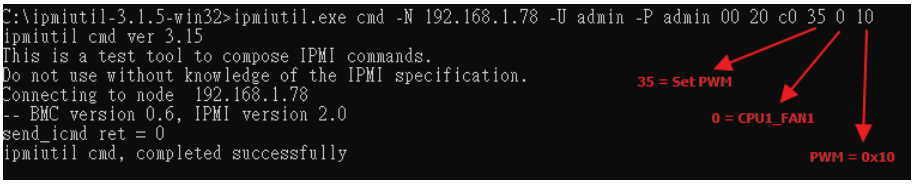
Step 3. Set fan mode to manual mode

ipmiutil.exe cmd -N [BMC IP] -U [user name] -P [user password] 00 20 c0 1 3



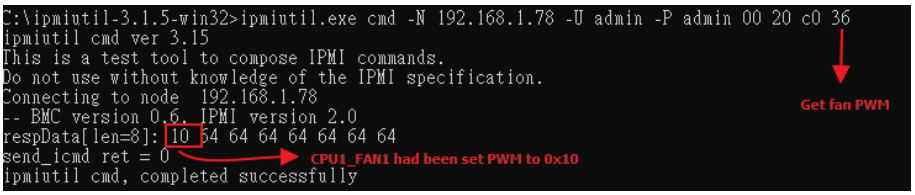
Step 4. Set fan PWM

ipmiutil.exe cmd -N [BMC IP] -U [user name] -P [user password] 00 20 c0 35 0 10



Step 5. Get fan PWM

ipmiutil.exe cmd -N [BMC IP] -U [user name] -P [user password] 00 20 c0 36



3 SEL Troubleshooting

3.1 Memory Correctable and Uncorrectable ECC Error

ECC errors are divided into Uncorrectable ECC Errors and Correctable ECC Errors.

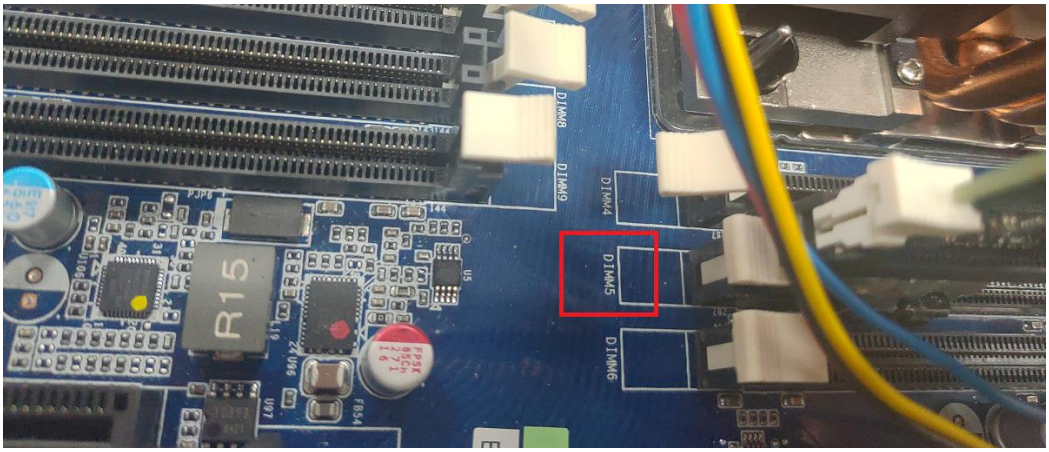
Correctable ECC errors can be detected and corrected if the chipset and DIMM support this functionality. This event in itself does not pose any direct problems because the ECC errors are still being corrected. Even though this event doesn't immediately lead to problems, it can indicate on the DIMM modules is slowly failing. If this error occurs multiple times, consider replacing the DIMM as a preventative measure.

An uncorrectable ECC error is a fatal issue. While correctable errors do not affect the normal operation of the system, uncorrectable memory errors will immediately result in a system crash or shutdown of the system. If an uncorrectable ECC error has occurred, consider replacing the DIMM as a preventative measure.

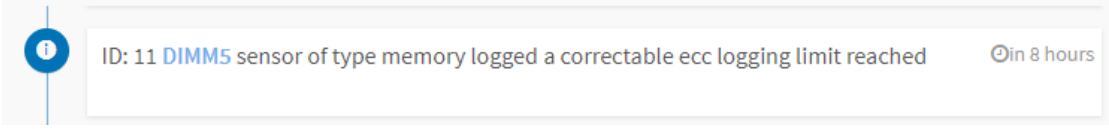
DIMM location from SEL:

1. Issus the command
   ipmitool –I lanplus –H [BMC IP address] -U [user name] -P [user password] sel elist
2. The SEL log will indicate which DIMM happens error

```
root@klash-VirtualBox:/home/klash/igt621/avalue_rr12# ipmitool -I lanplus -H 192.168.0.114 -U admin -P admin sel elist
   1 | 06/08/2020 | 22:50:13 | Fan SYS FAN1 | Lower Critical going low  | Asserted | Reading 0 < Threshold 800 RPM
   2 | 06/08/2020 | 22:50:13 | Fan SYS FAN2 | Lower Critical going low  | Asserted | Reading 0 < Threshold 800 RPM
   3 | 06/08/2020 | 22:50:13 | Fan SYS FAN3 | Lower Critical going low  | Asserted | Reading 0 < Threshold 500 RPM
   4 | 06/08/2020 | 22:50:14 | Physical Security ChassisIntrusion | General Chassis intrusion | Asserted
   5 | 06/08/2020 | 22:54:14 | Memory DIMM5 | Correctable ECC logging limit reached | Asserted
```



Logs & Reports >>IPMI Event Log



3.2 PCIe Errors

PCIe error events are either correctable (informational event) or fatal. In both cases information is logged to help identify the source of the PCIe error and the location.

Correctable errors include those error conditions where hardware can recover without any loss of information. Correctable errors are acceptable and normal at a low rate of occurrence. If the error continues, identify the card from SEL and check the following steps.

a. Verify the card is inserted properly.
b. Install the card in another slot and check if the error follows the card or stays with the slot.
c. Update all firmware and driver.

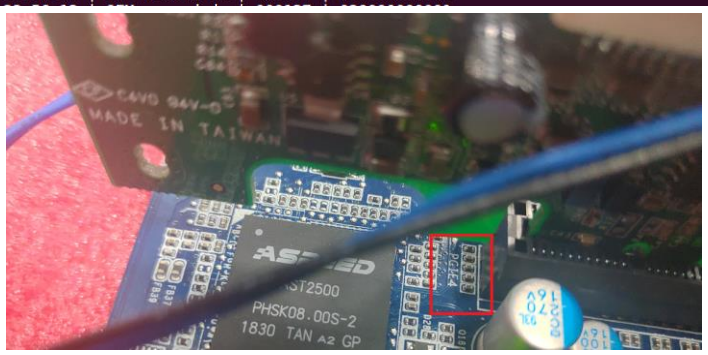
Fatal errors are uncorrectable error conditions which render the particular Link and related hardware unreliable. For Fatal errors, a reset of the components on the Link may be required to return to reliable operation. When a fatal error is reported, identify the card from SEL and check the following steps.

a. Verify the card is inserted properly.
b. Install the card in another slot and check if the error follows the card or stays with the slot.
c. Update all firmware and driver.

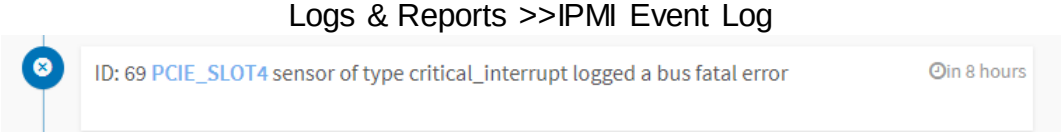
PCIe location from SEL:

1. Issus the command
   ipmitool –I lanplus –H [BMC IP address] -U [user name] -P [user password] sel elist
2. The SEL log will indicate which PCIE happens error

```
1 | 06/08/2020 | 22:50:13 | Fan SYS FAN1 | Lower Critical going low  | Asserted | Reading 0 < Threshold 800 RPM
2 | 06/08/2020 | 22:50:13 | Fan SYS FAN2 | Lower Critical going low  | Asserted | Reading 0 < Threshold 800 RPM
3 | 06/08/2020 | 22:50:13 | Fan SYS FAN3 | Lower Critical going low  | Asserted | Reading 0 < Threshold 500 RPM
4 | 06/08/2020 | 22:50:14 | Physical Security ChassisIntrusion | General Chassis intrusion | Asserted
5 | 06/08/2020 | 22:54:14 | Memory DIMM5 | Correctable ECC logging limit reached | Asserted
6 | 06/08/2020 | 22:56:09 | Critical Interrupt PCIE_SLOT4 | Bus Fatal Error | Asserted
7 | 06/08/2020 | 22:56:11 | OS Stop/Shutdown | Run-time critical stop | Asserted
8 | 06/08/2020 | 22:56:12 | OEM record de | 000137 | 012401000001
9 | 06/08/2020 | 22:56:12 | OEM record de | 000137 | 020000000001
```



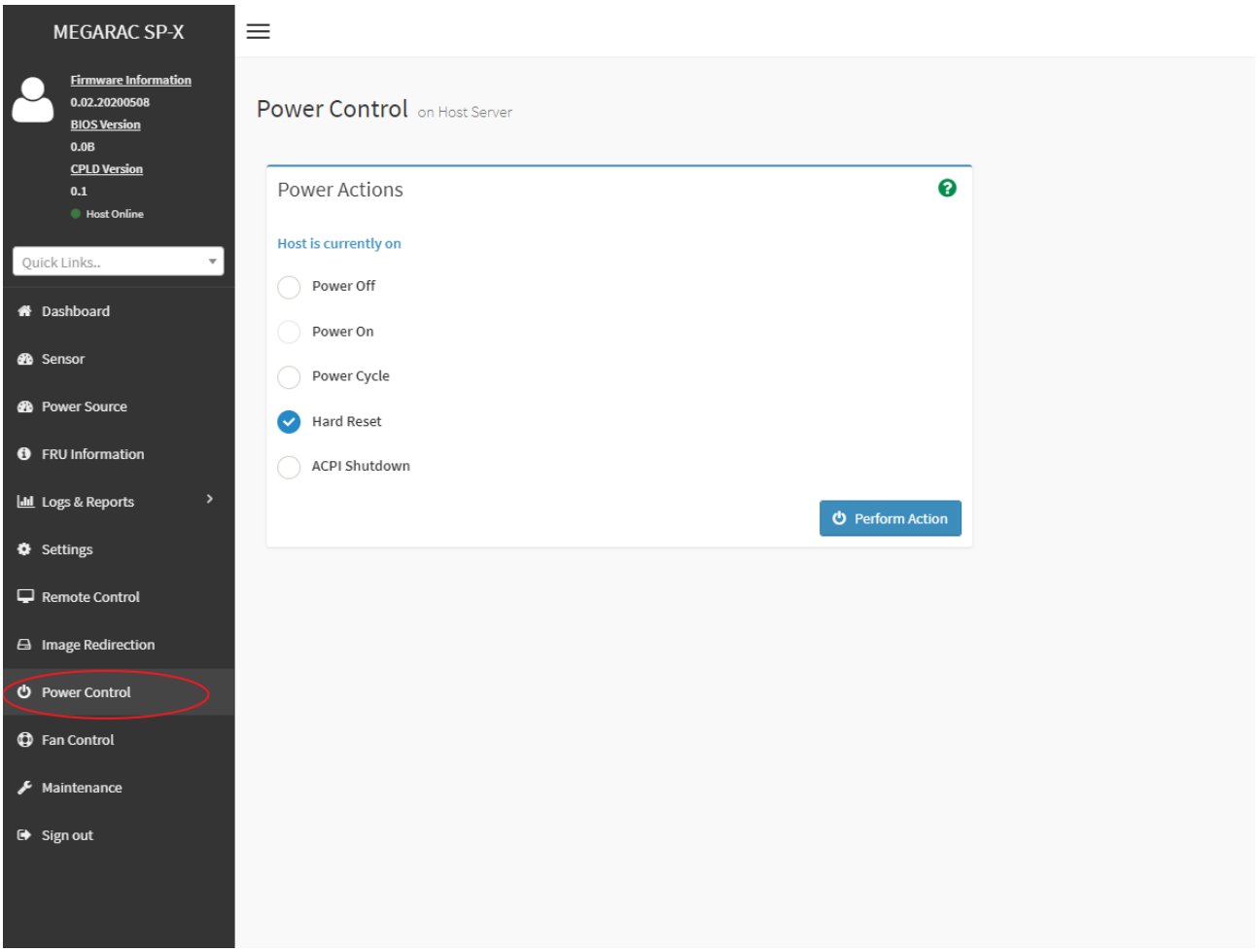
Logs & Reports >>IPMI Event Log



4 Web UI futures

4.1 Remote Power Control

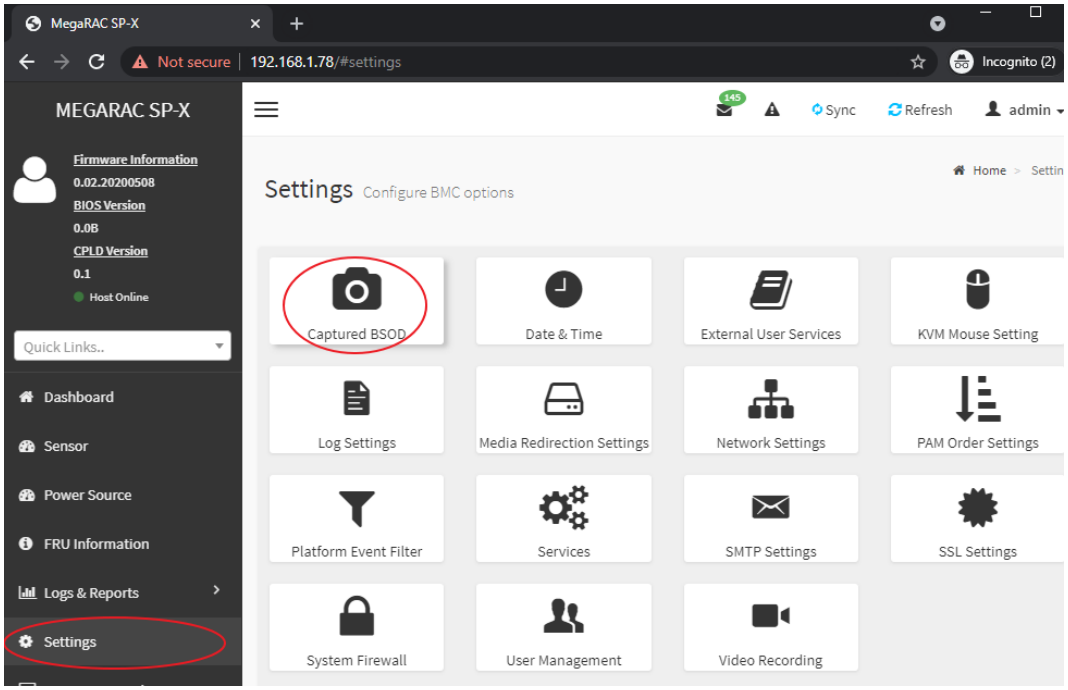
1 Click the **Power Control** tab, and then select the option and press **Perform Action** button.



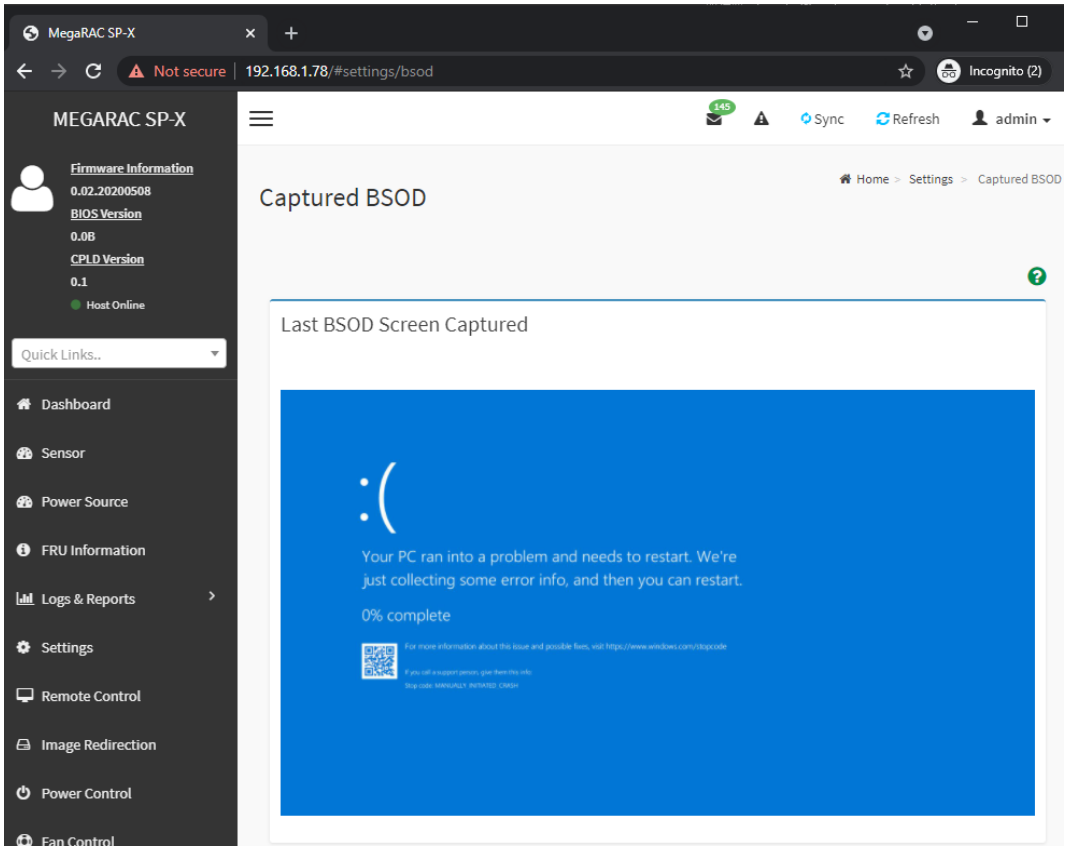
- **Power Off**
  Immediately power off the server
- **Power On**
  Power on the server
- **Power Cycle**
  Reboot the system without powering off (warm boot)
- **Hard Reset**
  Select this option to reboot the system without powering off (warm boot)
- **ACPI Shutdown**
  Initiate operating system shutdown prior to the shutdown

4.2 Capture and save BSOD information

1 Click the **Settings** tab, and then click **Capture BSOD** option.

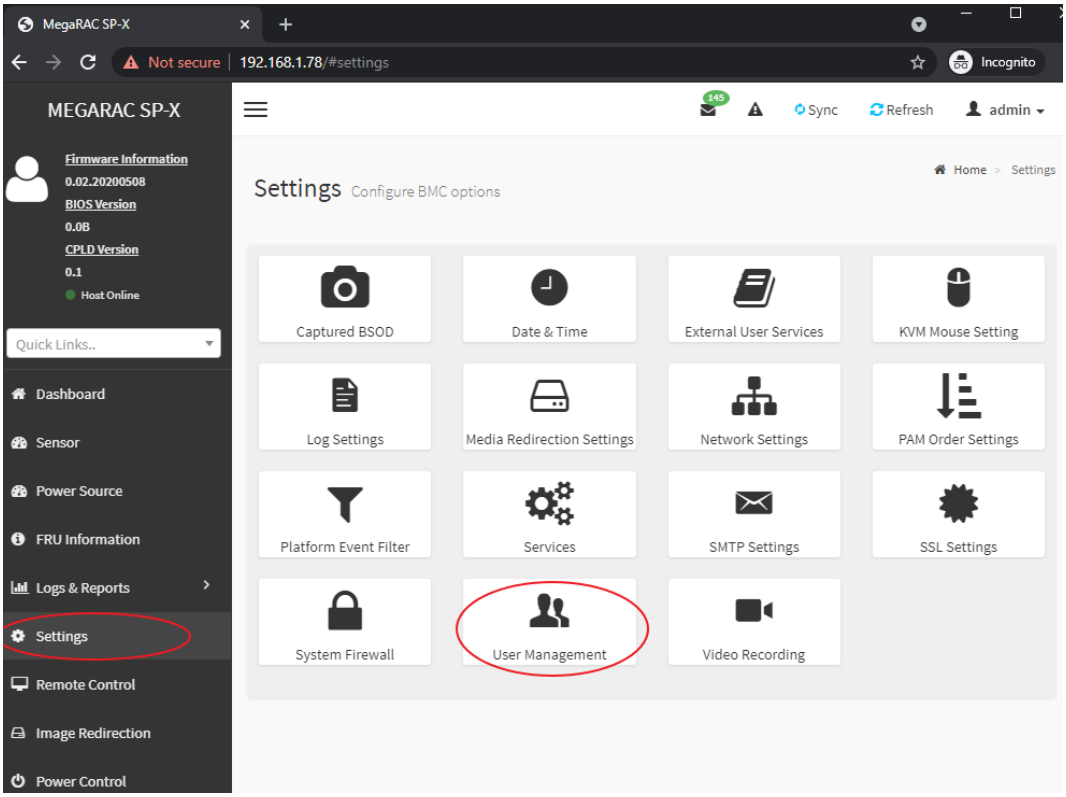


2 This page displays a snapshot of the blue screen captured if the host system crashed since the last reboot.

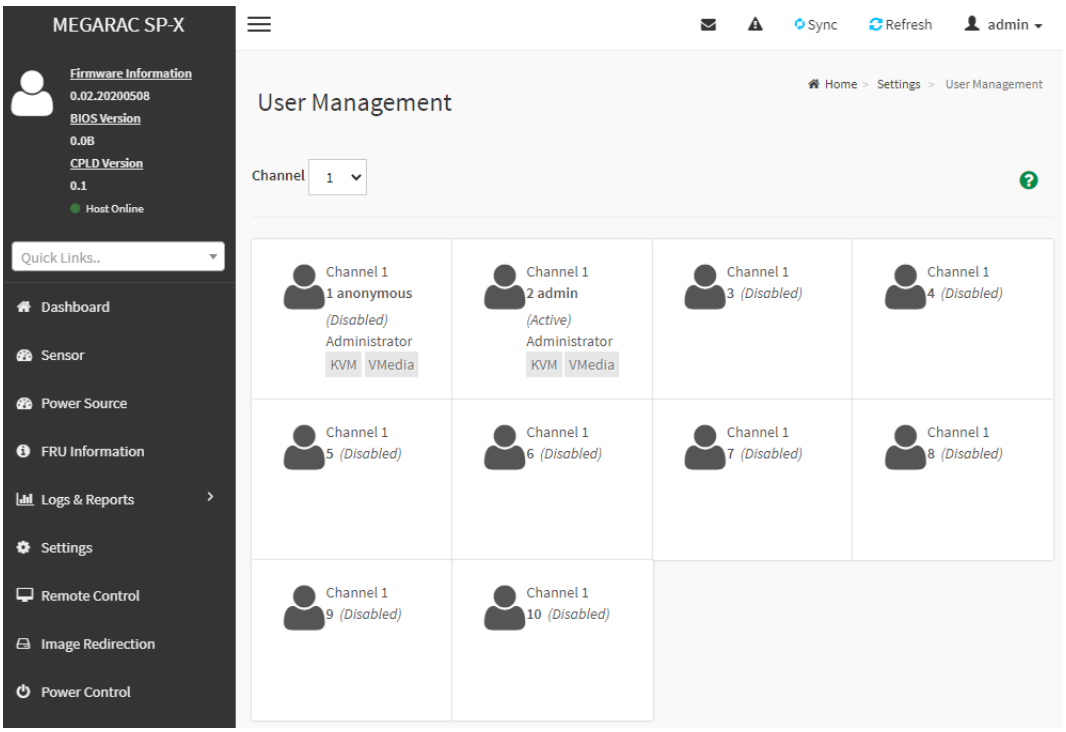


4.3 User Management

1 Click the **Settings** tab, and then click the **User Management** option.



2 Select the user to edit.



You can change user password or modify user privilege at the Configuration page.