

AIC[®]

BMC

BMC Firmware Update

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Document Release History

Release Date	Version	Update Content
2023/12/27	1.0	Initial Release
2025/2/5	1.1	1. Add homepage, directory, and history page. 2. Adjust the text layout and order. 3. Fixed "Yafuflash" utility parameter to change from "-force-boot" to "-full". 4. Added "Chip Select" description for "socflash" utility.
2025/9/9	1.2	Add some explanations in the following section. - 2. Update through the x86 CPU - 2.2 Use the "socflash" utility
2025/10/30	1.3	Add content to Chapter 1, Introduction.

1. Introduction

This document describes how to update the BMC (Baseboard Management Controller) firmware through multiple interfaces.

1.1 Prerequisites

Before performing any firmware update:

- Ensure stable power supply to avoid system shutdown during flashing.
- Ensure network and system connectivity.
- Verify the correct firmware image file (.ima) is used.
- Log in with administrator privileges.

1.2 Supported Update Methods

- Web GUI
- Yafuflash Utility (via USB, KCS, TCP/IP)
- Socflash Utility
- Redfish API

1.3 Important Notes

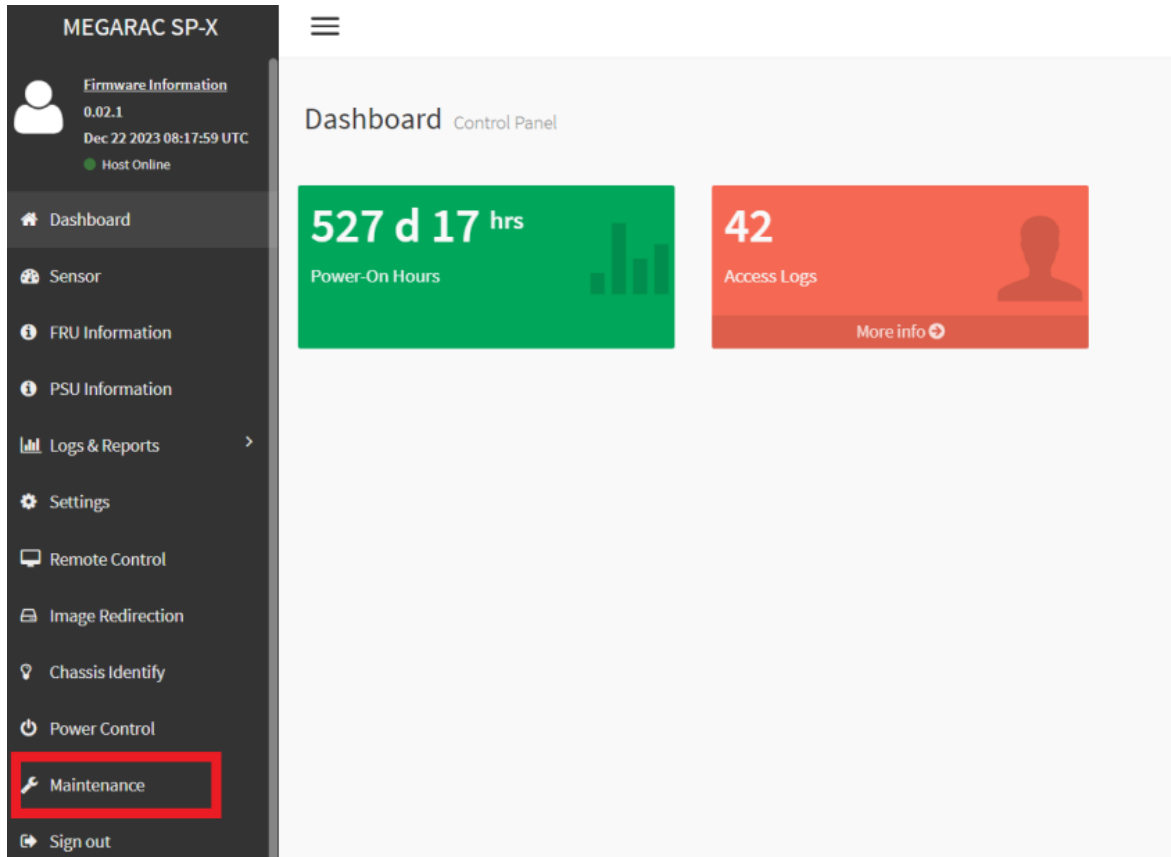
- Do not power off or reset the BMC during the update process.
- Ensure the firmware file corresponds to the target BMC version.
- If the system supports dual images, confirm which image bank is being updated.
- Fan speed will be set to **80%** duty cycle when BMC is in FW update mode.

2. BMC Firmware Update through BMC webpage

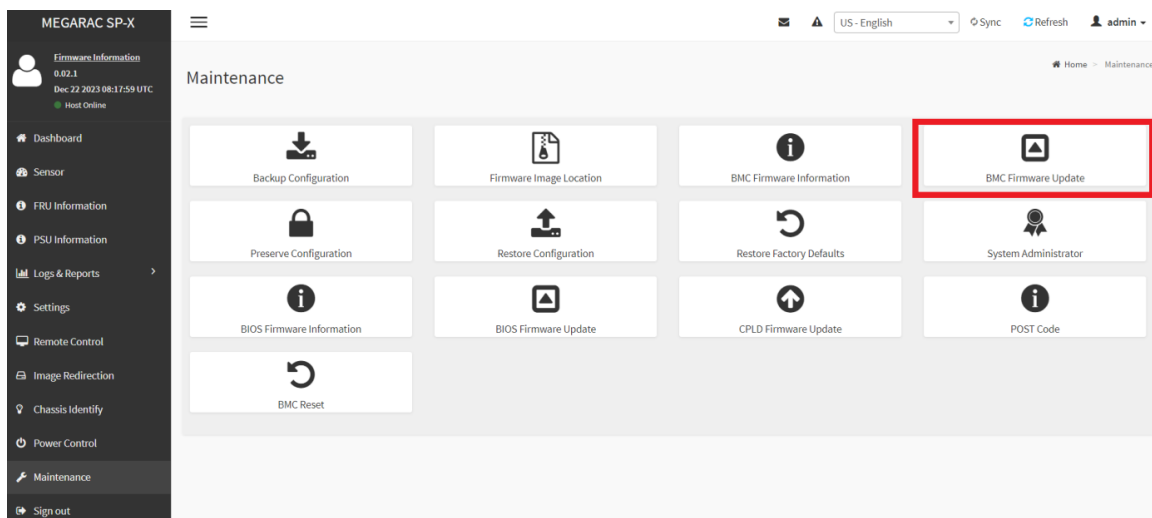
Login BMC webpage

Steps:

1. Select Maintenance



2. Select BMC Firmware Update



3. Choice BMC image (.ima file) and click Start firmware update

BMC Firmware Update

Note:
Following are the Firmware update methods and components supported in this page.

- Dual Firmware update.

Select Firmware Image

SIRIUS_000201.ima



Start firmware update

WARNING:Please note that after entering the update mode, the widgets, other web pages and services will not work. All the open widgets will be automatically closed. If the upgradation is cancelled in the middle of the wizard, the device will be reset only for BMC BOOT,and APP components of Firmware.

4. Select image

Protocol Type: HTTPS

Flash Mode:

Current Active Image

Image to be Updated

Image-1

The options for <Select Image> are listed below.

Option	Description
0	Update the inactive image
1	Update the image 1
2	Update the image 2
3	Update both images

5. Configuration setting

If you want to preserve all configurations, just select this option.

☒ **Preserve all Configuration.** This will preserve all the configuration settings during the firmware update - irrespective of the individual items marked as preserve/overwrite in the table below.

Otherwise, click “Edit Preserve Configuration” . It can preserve configuration Individually.

All configuration items below will be preserved as default during the restore configuration operation. Click "Edit Preserve Configuration" to modify the Preserve status settings.

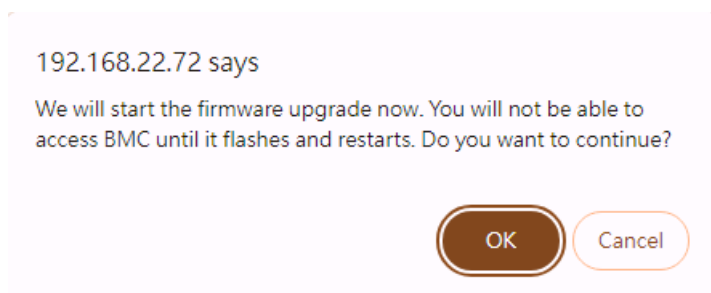
[Edit Preserve Configuration](#)

6. Click “Proceed to Flash”

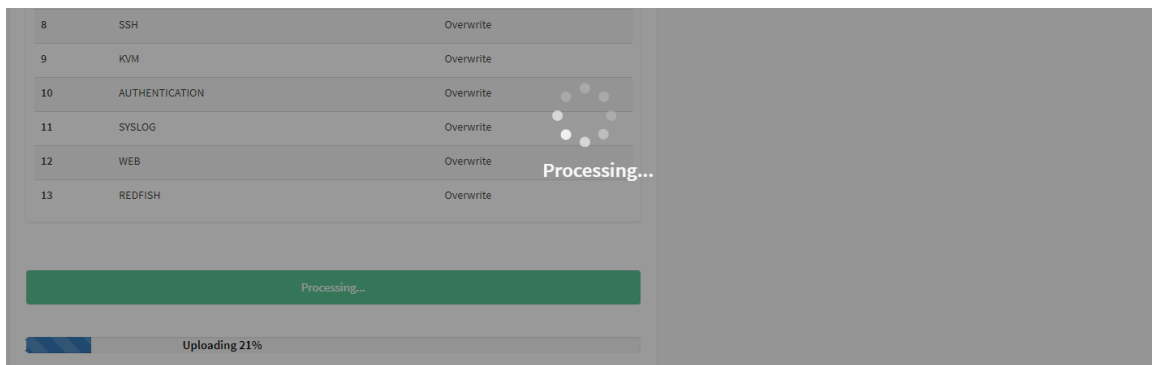
6	NTP	Overwrite
7	SNMP	Overwrite
8	SSH	Overwrite
9	KVM	Overwrite
10	AUTHENTICATION	Overwrite
11	SYSLOG	Overwrite
12	WEB	Overwrite
13	REDFISH	Overwrite

Proceed to Flash

7. Press “OK”



8. Processing (Uploading)



9. Flash setting

If you select “Full Flash”, it will be flash all section.

Section Based Firmware Update

The following section is used to allow the user to configure the firmware image for section based flashing.

☐ Full Flash

Otherwise, you can flash section individually.

Section Name	Existing version	Uploaded version	Upgradable/Non-Upgradable
boot	13.4.000000	13.4.000000	☐
conf	13.4.000000	13.4.000000	☐
bkupconf	13.4.000000	13.4.000000	☐
root	13.4.000000	13.4.000000	☐
osimage	13.4.000000	13.4.000000	☐
www	13.4.000000	13.4.000000	☐
testapps	2.4.000000	2.4.000000	☐
bootlogo	1.0.000000	1.0.000000	☐
aic	13.4.000000	13.4.000000	☐
arcity	5.2.1	5.2.1	☐

10. Complete

If BMC update successfully, it will reset BMC. Press “OK” .

192.168.22.72 says

Firmware reset has been called. Close the current session, and open a new session after a couple of minutes.

OK

3. Update through the x86 CPU

The operation in this chapter is performed on the host server; make sure your server had installed OS first.

3.1 Use the "Yafuflash" utility

3.1.1. Through USB interface (Only support "Ethernet Over USB")

- BMC's USB interface default IP is 169.254.0.17/16.
- On the host side, set the USB network interface to IPv4 Link Local or static IP 169.254.0.18/16.
- Full upgrade without Config Module preserved
\$ Yafuflash -nw -ip 169.254.0.17 -u <Username> -p <Password> -mse <Select Image> -full <Firmware Filename>
- Upgrade with Config Module preserved
\$ Yafuflash -nw -ip 169.254.0.17 -u <Username> -p <Password> -mse <Select Image> -preserve-config <Firmware Filename>

The options for <Select Image> are listed below.

Option	Description
0	Update the inactive image
1	Update the image 1
2	Update the image 2
3	Update both images

3.1.2. Through KCS interface (slowest)

- Full upgrade without Config Module preserved
\$ Yafuflash -kcs -mse <Select Image> -full <Firmware Filename>
- Upgrade with Config Module preserved
\$ Yafuflash -kcs -mse <Select Image> -preserve-config <Firmware Filename>

The options for <Select Image> are listed below.

Option	Description
0	Update the inactive image
1	Update the image 1
2	Update the image 2
3	Update both images

3.2 Use the "socflash" utility

It's full upgrade without Config Module preserved.

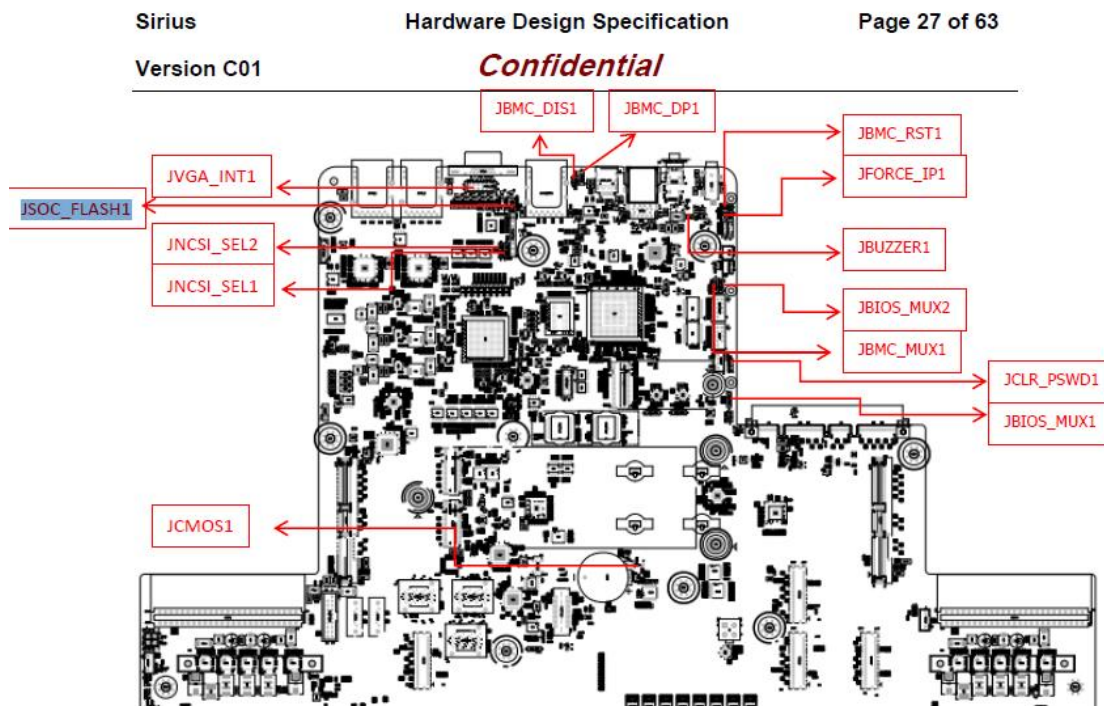
```
$ socflash -s <Firmware Filename> <Chip Select>
```

The options for < Chip Select> are listed below.

Option	Description
0	Update the image 1
1	Update the image 2

Refer to the hardware specification of the motherboard to adjust the hardware jump to enable BMC Socflash configurations.

Example:



BMC Socflash Configurations Jump Setting

JSOC_FLASH1	Setting
Short	Enable
Open	Disable (Default)

4. Update through TCP/IP network

4.1 Use the "Yafuflash" utility

- Full upgrade without Config Module preserved
\$ Yafuflash -nw -ip <BMC IP Address> -u <Username> -p <Password> -mse
<Select Image> -full <Firmware Filename>
- Upgrade with Config Module preserved
\$ Yafuflash -nw -ip <BMC IP Address> -u <Username> -p <Password> -mse
<Select Image> -preserve-config <Firmware Filename>

The options for <Select Image> are listed below.

Option	Description
0	Update the inactive image
1	Update the image 1
2	Update the image 2
3	Update both images

4.2 Firmware Update with “Redfish” through TCP/IP Network

The following APIs provides series of steps to update BMC firmware (full upgrade without Config Module preserved).

4.2.1. Change Password

Redfish Password change is required for Redfish Update Service and most of other URIs which require authorization.

Steps to change Redfish Password:

1. Select **Authorization** Type as **Basic Auth** and select the https method **PATCH**

URI: `https://{BMC IP}/redfish/v1/AccountService/Accounts/1`

Username: `Administrator`

Password: `superuser`

The screenshot shows the REST client interface with the PATCH method selected. The URL is `https://192.168.21.58/redfish/v1/AccountService/Accounts/1`. The Authorization tab is active, showing Basic Auth with Username `Administrator` and Password `superuser`.

2. Add

If-None-Match header and provide the value `""`.

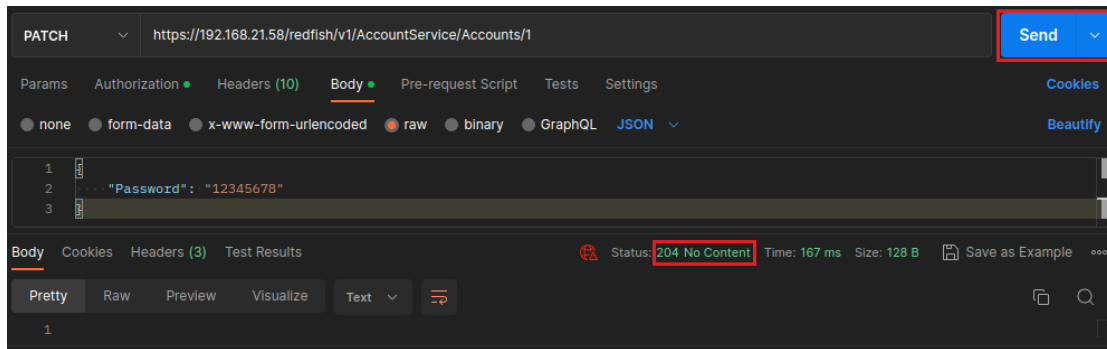
The screenshot shows the REST client interface with the Headers tab selected. The Headers table has one entry: **If-None-Match** with the value `""`.

3. Select **Body** type as **raw** data type **JSON** and provide the following request body.

```
{
  "Password": "12345678"
}
```

The screenshot shows the REST client interface with the Body tab selected. The raw data type is selected, and the JSON request body is provided: `{ "Password": "12345678" }`.

4. Hit the **Send** button and make sure the response code is **204 No Content**



5. Use the changed password as credentials for basic authorization to get the response for the Redfish URIs that require authentication.

4.2.2. BMC Firmware Update

Redfish API provides multipart push to update the BMC firmware and .bin BIOS image format.

4.2.2.1 Multipart Push FW Update

Request:

```
POST /redfish/v1/UpdateService/upload
Host: <bmc_ip>
Content-Length: <len_of_request>
Content-Type: multipart/form-data; boundary=-----493918603359346570222237
-----493918603359346570222237
Content-Disposition: form-data; name= UpdateFile ; filename= encrypted_rom.ima
Content-Type: application/octet-stream
<image_binary>
-----493918603359346570222237
Content-Disposition: form-data; name= UpdateParameters ; filename= parameters.json
Content-Type: application/json
{
  Targets :[
    /redfish/v1/UpdateService/FirmwareInventory/BMC
  ]
}
-----493918603359346570222237
Content-Disposition: form-data; name= OemParameters ; filename= oem_paramters.json
Content-Type: application/json
{
  ImageType : BMC ,
}
-----493918603359346570222237--
```

The parameters are mentioned in **3.2.2.2**.

Using POSTMAN, please follow the steps as given below.

1. Create a JSON file parameters.json with content like below.

```
{
  "Targets":[
    "/redfish/v1/UpdateService/FirmwareInventory/BMC"
  ]
}
```

If dual images are supported, create **parameters.json** with content like below.

```
{
  "Targets":[
    "/redfish/v1/UpdateService/FirmwareInventory/BMCImage1"
  ]
}
```

2. Create a JSON file **oem_parameters.json** with content like below.

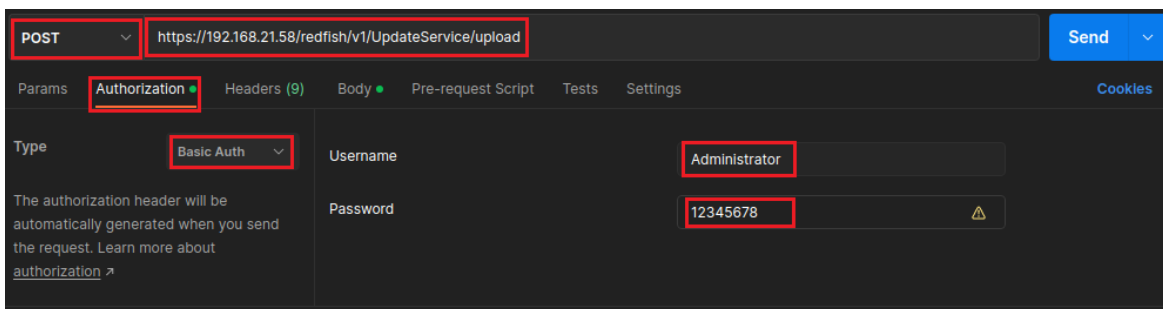
```
{
  "ImageType":"BMC"
}
```

3. Open POSTMAN and enter the URI to POST the request, select the https method **POST** and select **Authorization** Type as **Basic Auth**.

URI: `https://{{BMC IP}}/redfish/v1/UpdateService/upload`

Username: `Administrator`

Password: `12345678`



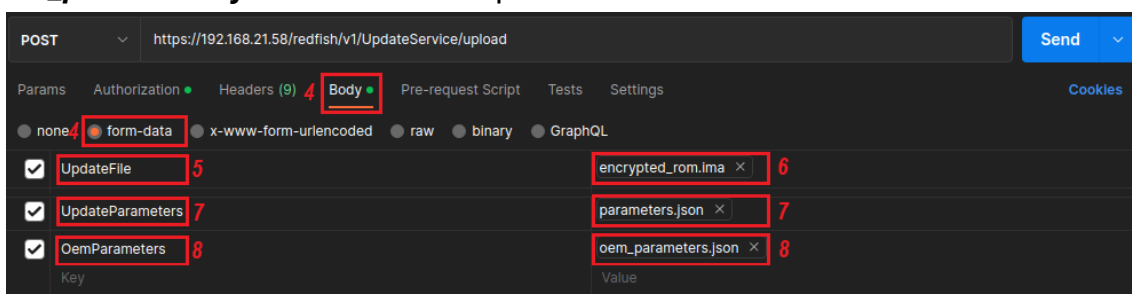
4. In the **Body** tab, select **form-data**.

5. Provide the key name as **UpdateFile** in the KEY section and change its type from Text to File.

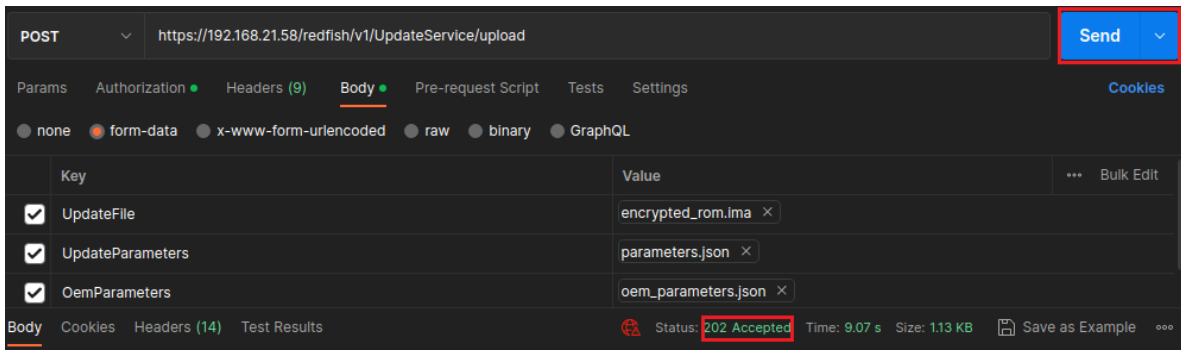
6. Click on Select **File** in the VALUE section to select the BMC firmware image **.ima** file which is available in your local machine to update.

7. Like step 5 and 6, provide key name **UpdateParameters** and select **parameters.json** created in step 1.

8. Like step 5 and 6, provide key name **OemParameters** and select **oem_parameters.json** created in step 2.

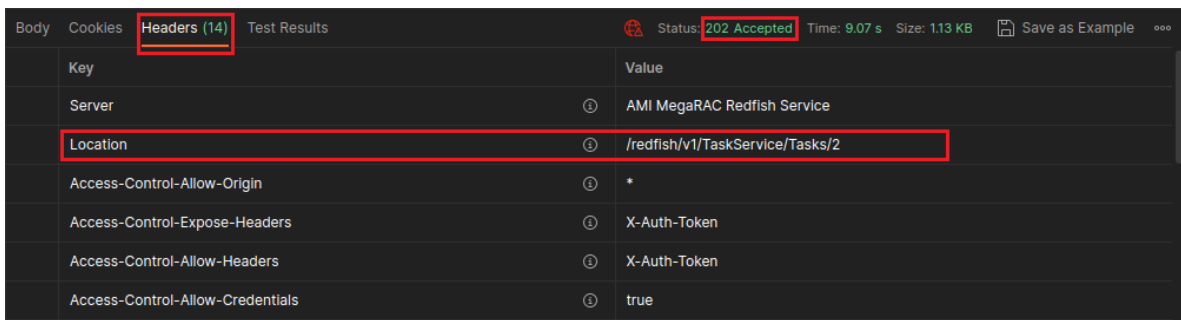


9. Hit the **Send** button and make sure the response code is **202 Accepted**



Response:

- Success: HTTP status will be **202 Accepted**. The server would create a Task and response status 202 after accepted this request, but the update has not been completed. The response http **Headers** would include a **Location** header. Location header has the link to the Task resource for this updating service.
- Failure: HTTP status will be other.



4.2.2.2 Parameters of Multipart Push

The description of parameters is given in the table below.

Part Name	Description
UpdateFile	Image binary for update
UpdateParameters	DMTF defined standard parameters in JSON format
OemParameters	OEM parameters in JSON format

UpdateParameters:

The details of **UpdateParameters** are given below.

Parameter Name: **Targets**

Data Type: Array of URI

Target URI	Description
/redfish/v1/UpdateService/FirmwareInventory/BMC	Update BMC single image
/redfish/v1/UpdateService/FirmwareInventory/BIOS	Update BIOS image
/redfish/v1/UpdateService/FirmwareInventory/BMCImage1	Update BMC dual image 1
/redfish/v1/UpdateService/FirmwareInventory/BMCImage2	Update BMC dual image 2

OemParameters:

The details of ***OemParameter*** are given below.

Parameter Name: ***ImageType***

Data Type: String

ImageType	Description
BMC	Indicates uploaded file is a BMC image
BIOS	Indicates uploaded file is a BIOS image.