BMC

BMC Firmware Update

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Document Release History

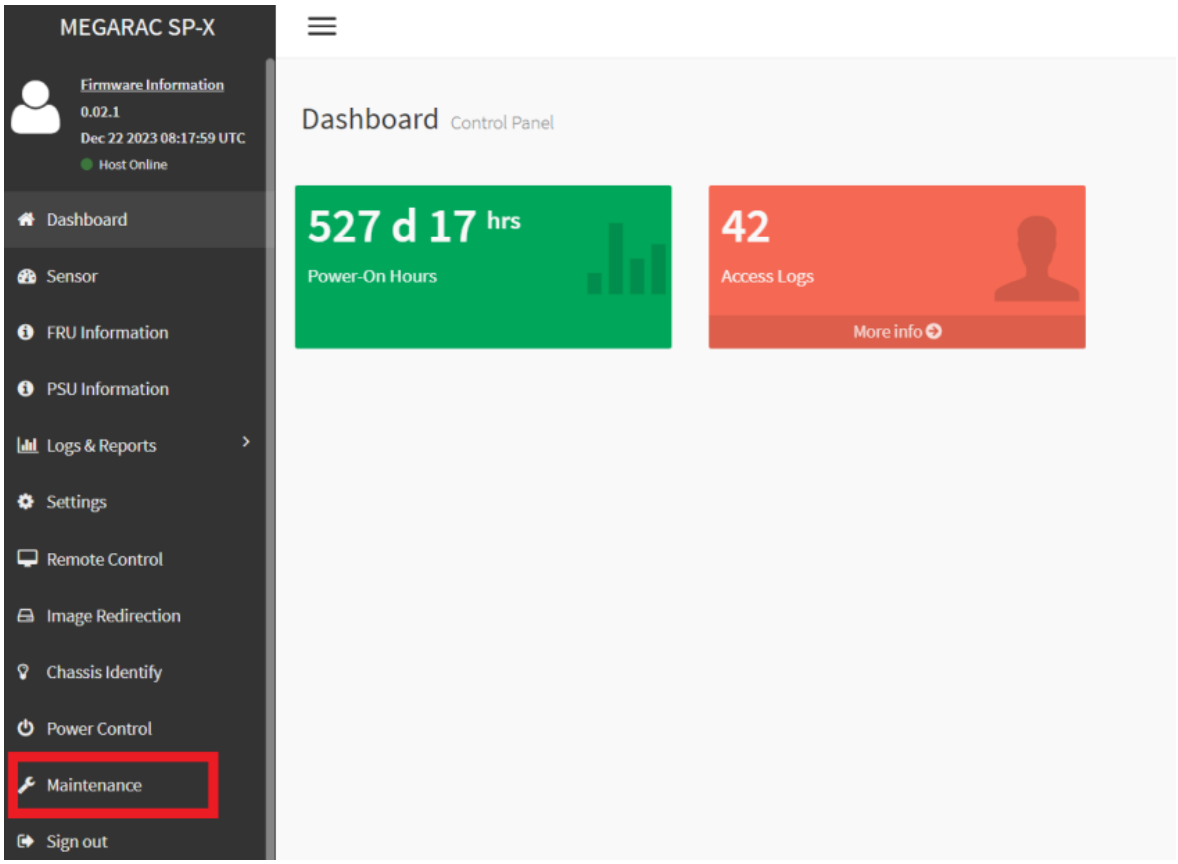
Release Date	Version	Update Content
2023/12/27	1.0	Initial Release
2025/2/5	1.1	1. Add homepage, directory, and history page. 2. Adjust the text layout and order. 3. Fixed "Yafuflash" utility parameter to change from “-force-boot” to “-full”. 4. Added "Chip Select" description for "socflash" utility.

1. BMC Firmware Update through BMC webpage

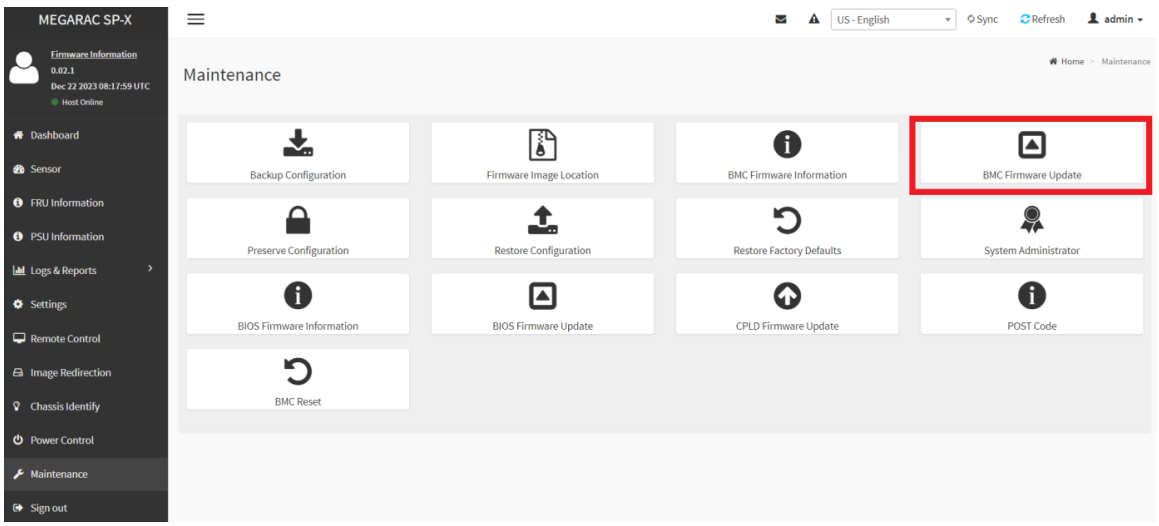
Login BMC webpage

Steps:

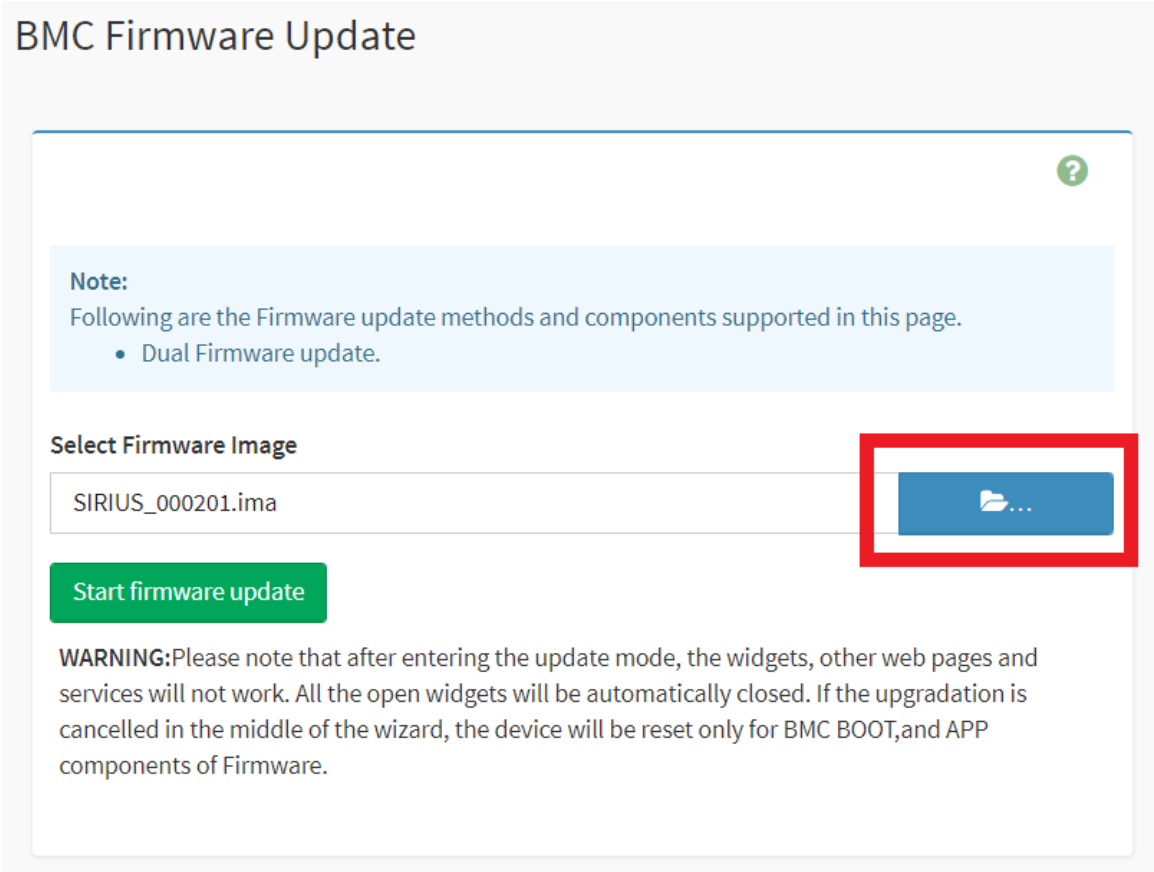
1. Select Maintenance



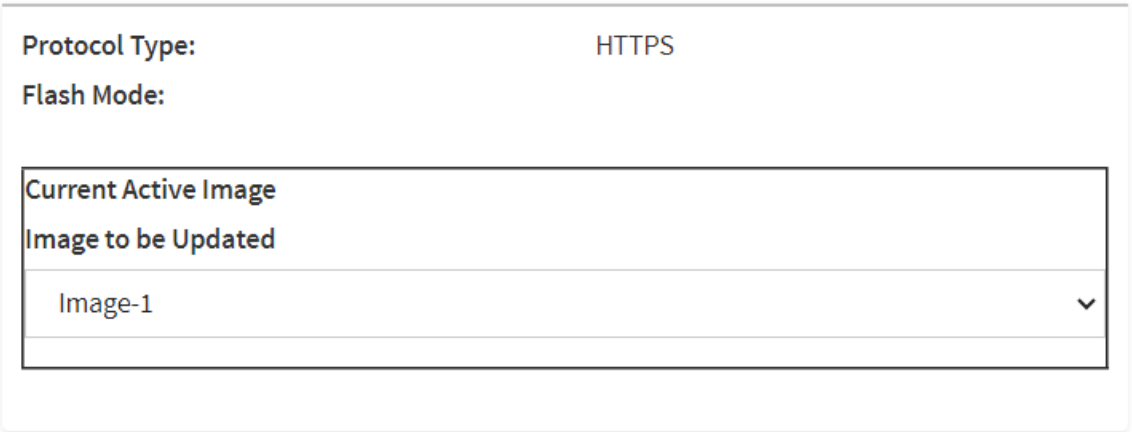
2. Select BMC Firmware Update



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



4. Select image

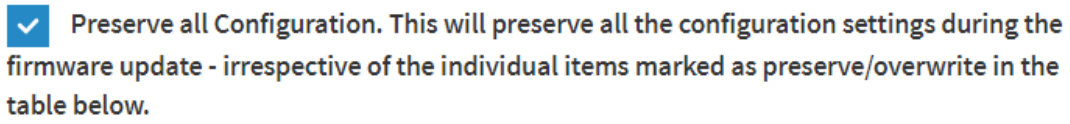


The options for <Select Image> are listed below.

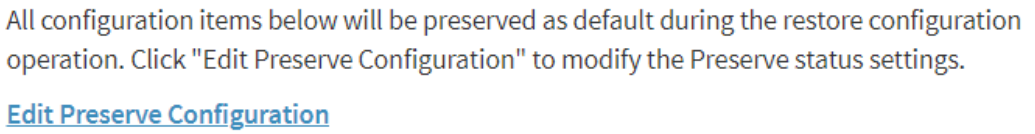
Option	Description
0	Update the inactive image
1	Update the image 1
2	Update the image 2
3	Update both images

5. Configuration setting

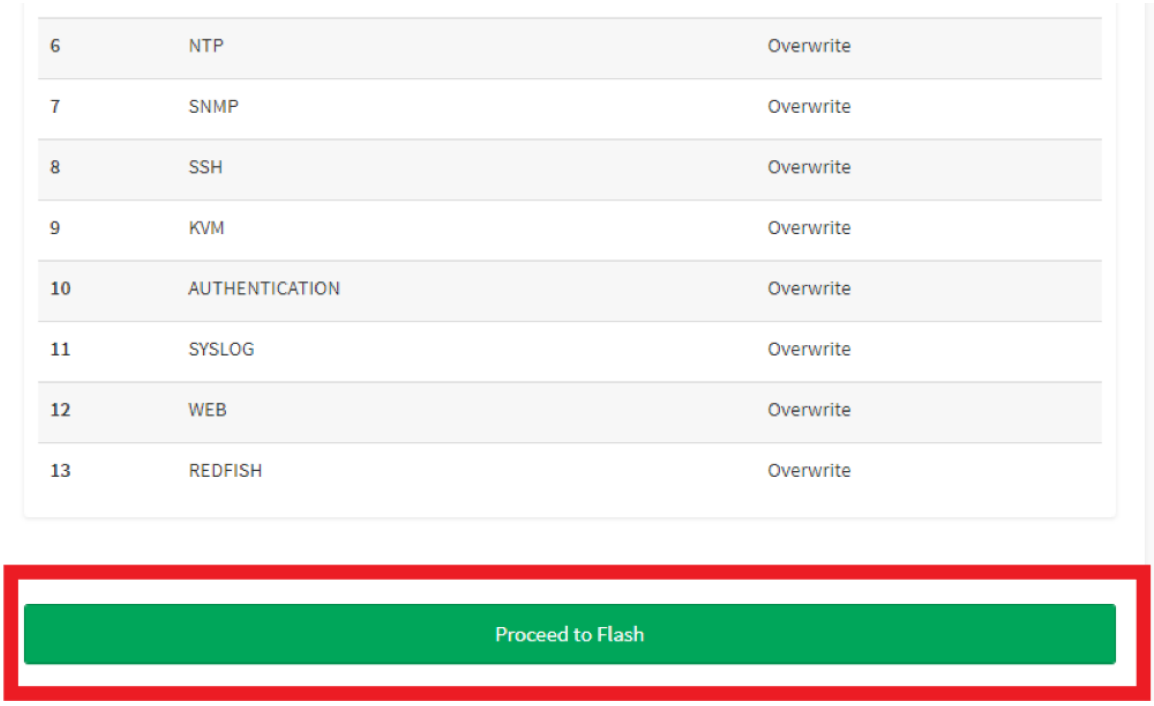
If you want to preserve all configurations, just select this option.



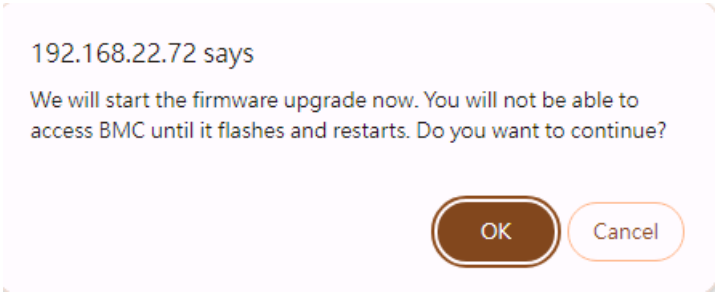
Otherwise, click “Edit Preserve Configuration”. It can preserve configuration Individually.



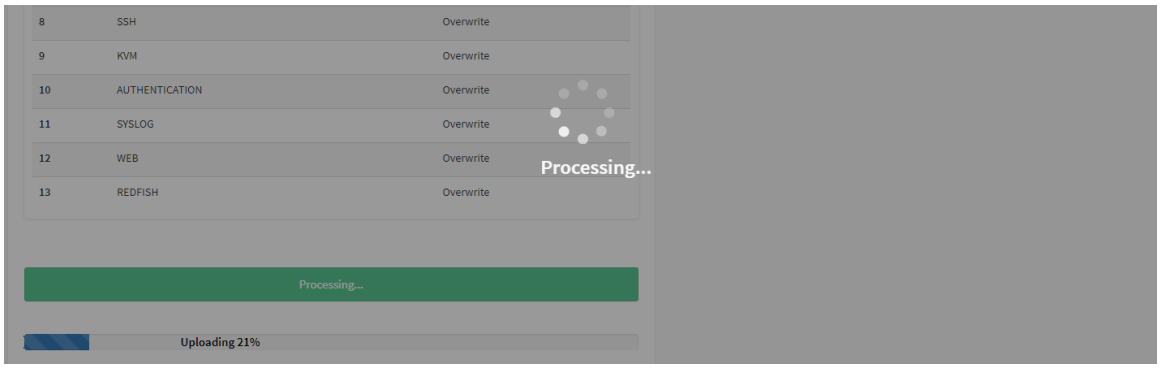
6. Click “Proceed to Flash”



7. Press “OK”

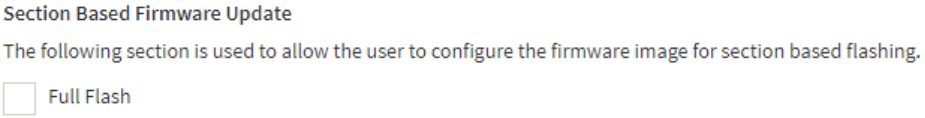


8. Processing (Uploading)

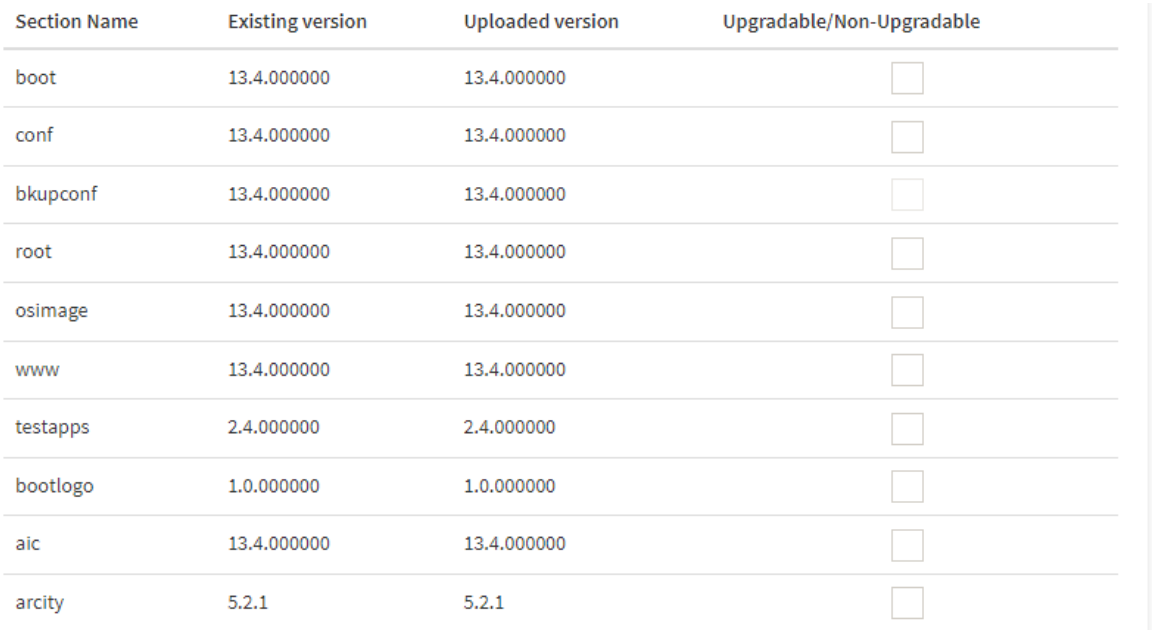


9. Flash setting

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



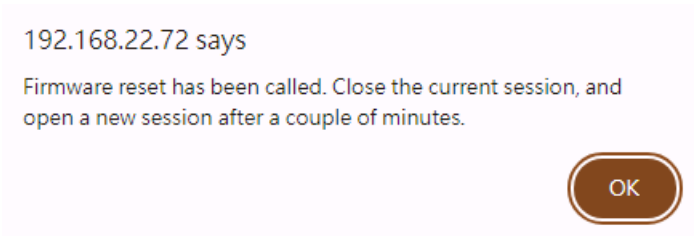
Otherwise, you can flash section individually.



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”.



2. Update through the x86 CPU

2.1 Use the "Yafuflash" utility

2.1.1. 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

2.1.2. 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

2.2 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

3. Update through TCP/IP network

3.1 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

3.2 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).

3.2.1. Change Password

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

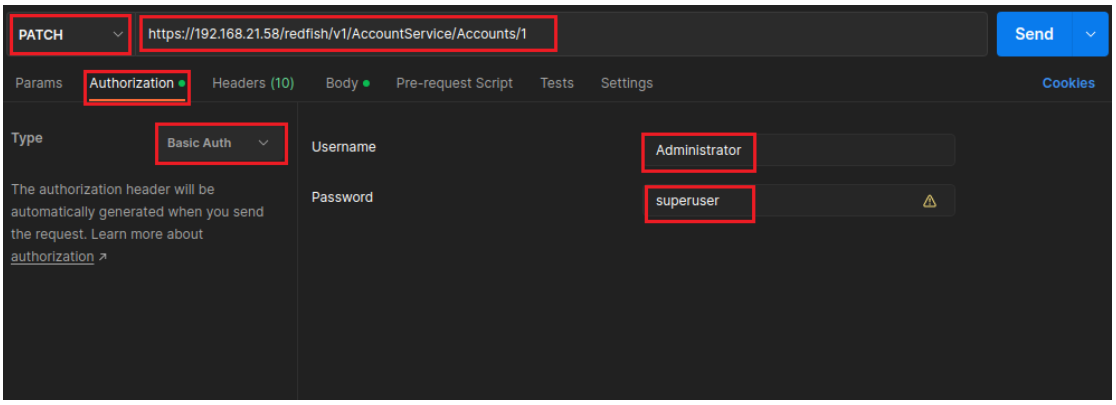
Steps to change Redfish Password:

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

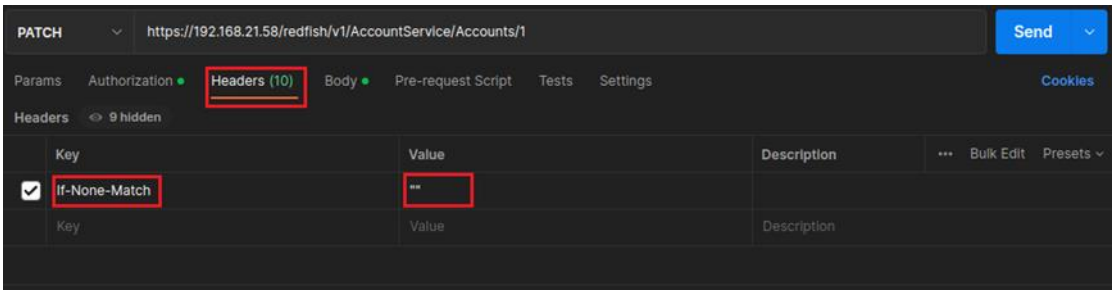
   URI: *https://{{BMC IP}}/redfish/v1/AccountService/Accounts/1*

   Username: *Administrator*

   Password: *superuser*

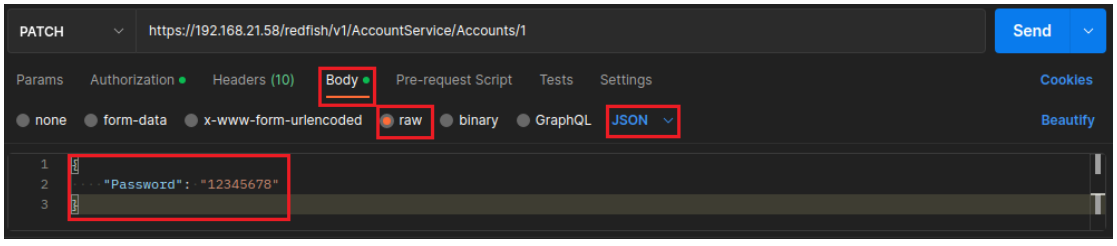


2. Add ***If-None-Match*** header and provide the value “”.

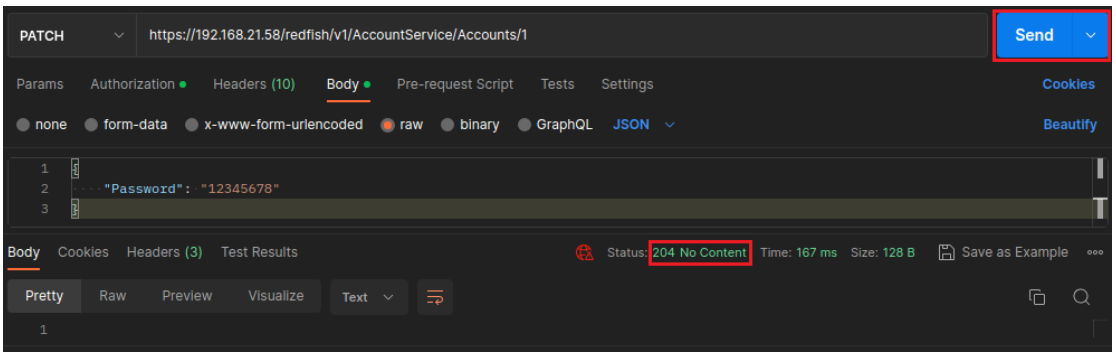


3. Select ***Body*** type as ***raw*** data type ***JSON*** and provide the following request body.

```
{
    "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.

3.2.2. BMC Firmware Update

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

3.2.2.1 Multipart Push FW Update

Request:

```
POST /redfish/v1/UpdateService/upload
Host: <bmc_ip>
Content-Length: <len_of_request>
Content-Type: multipart/form-data; boundary=-------4939186033593465702222237
-------4939186033593465702222237
Content-Disposition: form-data; name= UpdateFile ; filename= encrypted_rom.ima
Content-Type: application/octet-stream
<image_binary>
-------4939186033593465702222237
Content-Disposition: form-data; name= UpdateParameters ; filename= parameters.json
Content-Type: application/json
{
Targets :[
/redfish/v1/UpdateService/FirmwareInventory/BMC
]
}
-------4939186033593465702222237
Content-Disposition: form-data; name= OemParameters ; filename= oem_paramters.json
Content-Type: application/json
{
ImageType : BMC ,
}
-------4939186033593465702222237--
```

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.

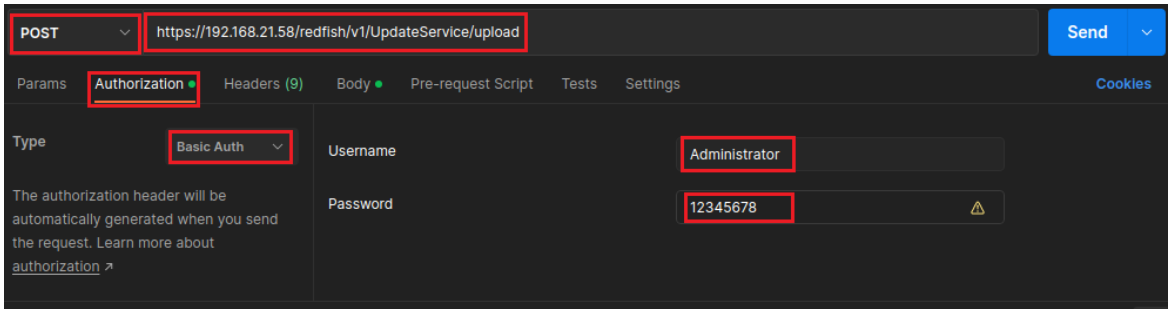
```
{
    "ImageType":"BMC"
}
```

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*



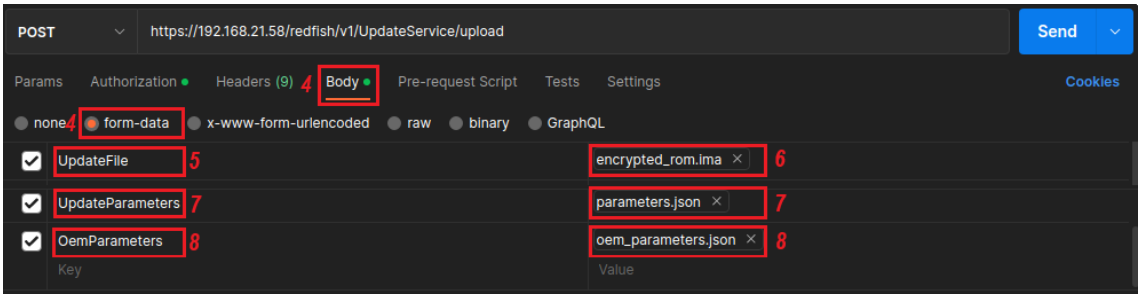
4. In the ***Body*** tab, select ***form-data***.

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

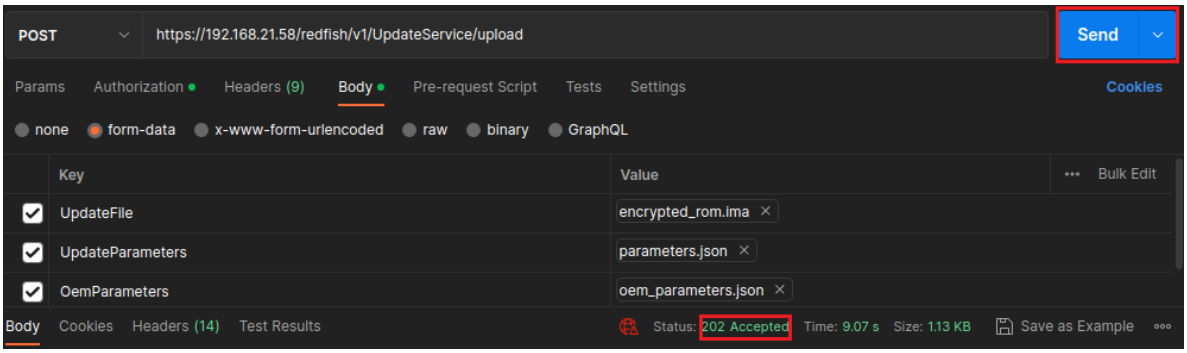
6. Click on Select ***File*** in the VALUE section to select the BMC firmware image ***.ima*** file which is available in your local machine to update.

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.

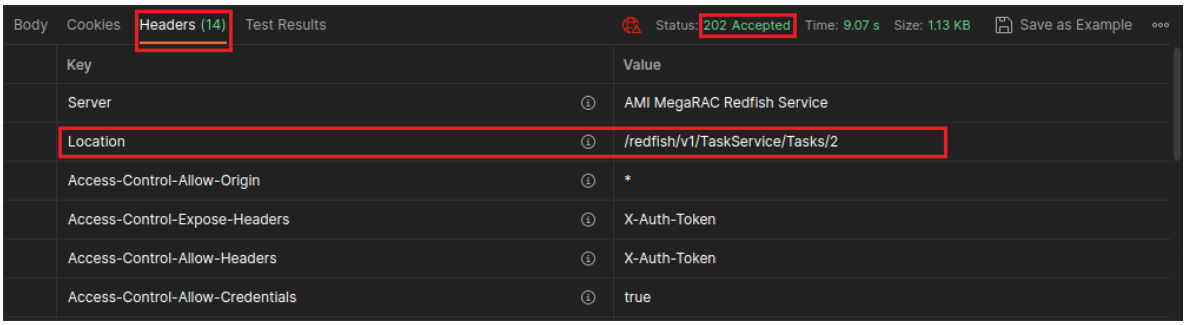


9. Hit the ***Send*** button and make sure the response code is ***202 Accepted***



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.



3.2.2.2 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.