

HQ-Box2 BMC how-to

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1. Introduction

The HQ-Box2 server series uses Aspeed AST2600 as its BMC¹. The AST2600 is ASPEED's 7th generation Server Management Processor. It is a Dual-core ARM Cortex A7 processor, which supports Secure Boot mode and ARM Cortex A7 TrustZone, providing enhanced security protection.

The HQ-Box2 uses the OpenBMC firmware stack. OpenBMC is a widely supported and active [open source package](#) which provides among other things the following features:

- Host management: Power, Cooling, LEDs, Inventory, Events, Watchdog
- Full IPMI 2.0 Compliance with DCMI
- Web-based user interface
- Remote KVM
- User management
- Virtual media

This guide will give a short presentation of how to configure and use the HQ-Box2 BMC.

¹ BMC is acronym for Baseboard Management Controller

2. BIOS configuration

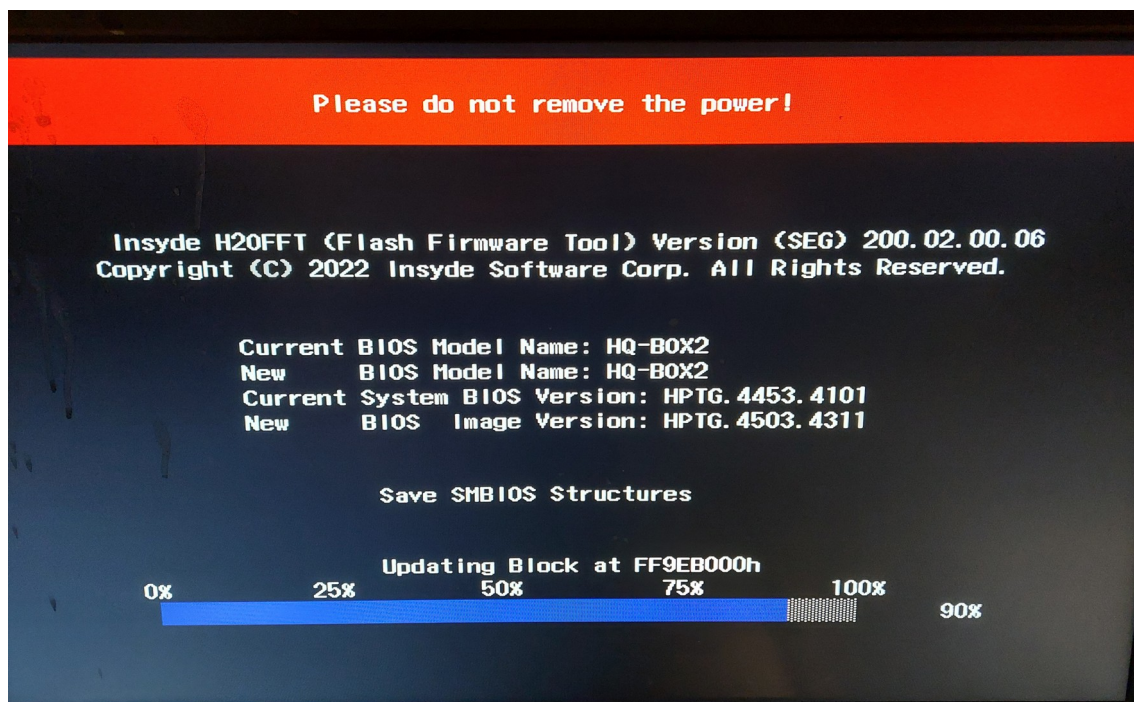
Your HQ-Box2 BIOS version must be 4503.4311 or later. Check your BIOS version by:

1. Reboot the HQ-Box2 and enter setup by constantly pressing the *ESC* key.
2. At the top of the Front Page you will see:

HQ-BOX2 Server	→ Product name
Intel® Xeon® D-1746TER CPU @ 2.00GHz	→ CPU identification
xxxxx-xxxxxxx-xxx	→ Serial number
4503.4311	→ BIOS version

Update your BIOS as follows:

1. Prepare a USB disk:
 1. Download the latest HQ-Box2 BIOS version from Heptagon Systems web site.
 2. Make sure the USB disk is formatted as FAT32.
 3. Copy the BIOSILD directory (folder) and startup.nsh into the USB disk root directory.
2. Plug the USB disk into one of the HQ-Box USB connectors.
3. Reboot the HQ-Box2 and enter setup by constantly pressing the *ESC* key.
4. After getting into BIOS setup:
 1. Navigate to "Boot Manager" and boot from "EFI internal shell". (Note a new uninitialized HQ-Box2 will automatically boot into the shell).
 2. The HQ-Box2 will identify the the BIOS upgrade by writing "BIOSILD FOUND" and "READY".
 3. Start typing "bios" and hit *Tab* to complete the file name. You should see "*bios_full_nnnn_nnnn-nn.efi*" where the *nnnn_nnnn-nn* is the BIOS version identifier.
 4. Hit Enter to start the upgrade.
 1. Do not turn off the HQ-Box2 while the upgrade is in process.
 2. The HQ-Box2 will restart a few times.
 3. By the end of the upgrade it will boot ordinary.



3. Finding the BMC IP address

Enter BIOS setup by constantly pressing the *ESC* key. In the BIOS Front Page, navigate to "Setup utility" --> "Advanced" --> "H2O IMPI Configuration" --> "BMC Configuration". At the bottom of the screen you will find the DHCP assigned IP address of the BMC.

Note: It is highly recommended to assign a static IP to the BMC. You can do it from the router aligning the BMC MAC address to an IP address. FQDN name of the HQ-Box2 will be listed in the DHCP Client list as HQ-BOX2-XXXXXX-XXXXXX-XXX where XXX is the serial number of the HQ-Box2 motherboard. Otherwise you may set the BMC IP address from the BIOS.

4. Remote Login to the BMC

1. The PC which will login to the HQ-Box2 BMC must have access to the network address of the BMC. This PC is called admin-PC
2. Open a web browser in the Admin-PC and enter the BMC IP address. Depending on the web browser you use, it may warn you as below. Hit Advance to continue.



Warning: Potential Security Risk Ahead

Firefox detected a potential security threat and did not continue to **10.0.2.14**. If you visit this site, attackers could try to steal information like your passwords, emails, or credit card details.

[Learn more...](#)

Go Back (Recommended)

Advanced...

3. And then with the second warning, click "Accept the risk and continue"

10.0.2.14 uses an invalid security certificate.

The certificate is not trusted because it is self-signed.

Error code: [MOZILLA_PKIX_ERROR_SELF_SIGNED_CERT](#)

[View Certificate](#)

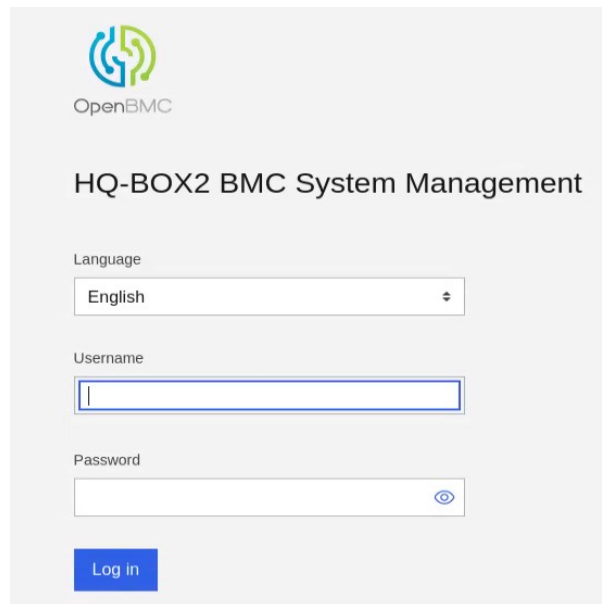
Go Back (Recommended)

Accept the Risk and Continue

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4. The below login window will open.



The screenshot shows the OpenBMC login interface. At the top is the OpenBMC logo. Below it is the title 'HQ-BOX2 BMC System Management'. There are three input fields: 'Language' with a dropdown menu showing 'English', 'Username' with a text box, and 'Password' with a text box and an eye icon for toggling visibility. A blue 'Log in' button is at the bottom.

5. Use *sysadmin* as Username and ask your IT for the password.

Note: As a security measure, the default OpenBMC Username/password will not work with the HQ-Box2. The default Username / Password of a given HQ-Box2 is sent to the client at shipment. We strongly advise to create your own password right after first login.

Note: Advance users may access the BMC using SSH/22.

5. BMC usage

5.1. Main screen

Built on OpenBMC | HQ-BOX2 Embedded Server 100027-221018-201

Overview

BMC date and time
2023-05-24 14:16:49 UTC

System information

Server information		Firmware information	
Model	Server manufacturer	Running	Firmware version
HQ-BOX2 Embedded Server	Heptagon Systems	v01.56-hqbox2-20230523140027	--
Serial number		Backup	
100027-221018-201		--	

Network information

Network information	
Hostname	Link status
HQ-BOX2-100027-221018-201	LinkUp
IPv4	DHCPv4
--	--

Status information

Event logs		Inventory and LEDs	
Critical	Warning	System identify LED	
0	0	Off	

The main BMC provides general information about the HQ-Box2. On the top right hand part of the screen you can find the user name and health status of the system



1. User profile is accessed by pressing the user name. In the user profile you can change the password and set the displayed time zone.
2. Events and post code log can be found under Logs.
3. Hardware status will provide temperature readings and man more detailed system information.

5.2. Remote control the HQ-Box - KVM

Remote controlling the HQ-Box is done by selecting Operations → KVM. Use the “Open in new tab” option if you want better control of the system.

Overview

Logs

Hardware status

Inventory and LEDs

Sensors

Operations

Factory reset

KVM

Firmware

Reboot BMC

Server power operations

Virtual media

Settings

Security and access

KVM

Status: ConnectedSend Ctrl+Alt+DeleteOpen in new tab

Advanced

InsydeH2O Setup Utility

Rev. 5.0

BMC Configuration

Watchdog Timer Support

Watchdog Timer Log

Watchdog Timer Use

Watchdog Timer Timeout (Minutes)

Watchdog Timer Timeout (Seconds)

Watchdog Timer Action

Enable Watchdog in OS

OS Watchdog Timer Log

Watchdog Timer Use

Watchdog Timer Timeout (Minutes)

Watchdog Timer Timeout (Seconds)

Watchdog Timer Action

Power Cycle Time Support

Power Cycle Time

Power Button

Reset Button

NMI Button

Dedicated NIC :

LAN Channel Number

IPv4 Mode

IPv4 Source

IPv4 IP Address

IPv4 Subnet Mask

IPv4 Gateway Address

<Disabled>

<Log>

<BIOS/POST>

[5]

[0]

<Hard Reset>

<Disabled>

<Log>

<OS Load>

[5]

[0]

<Hard Reset>

<Disabled>

[10]

<Enabled>

<Enabled>

<Enabled>

[1]

<Enabled>

<DHCP>

10.0.2.14

255.255.248.0

10.0.2.138

Enable/Disable BMC watchdog timer at start of POST.

F1 Help

Esc Exit

F7 Select Item

F8 Select Item

F5/F6 Change Values

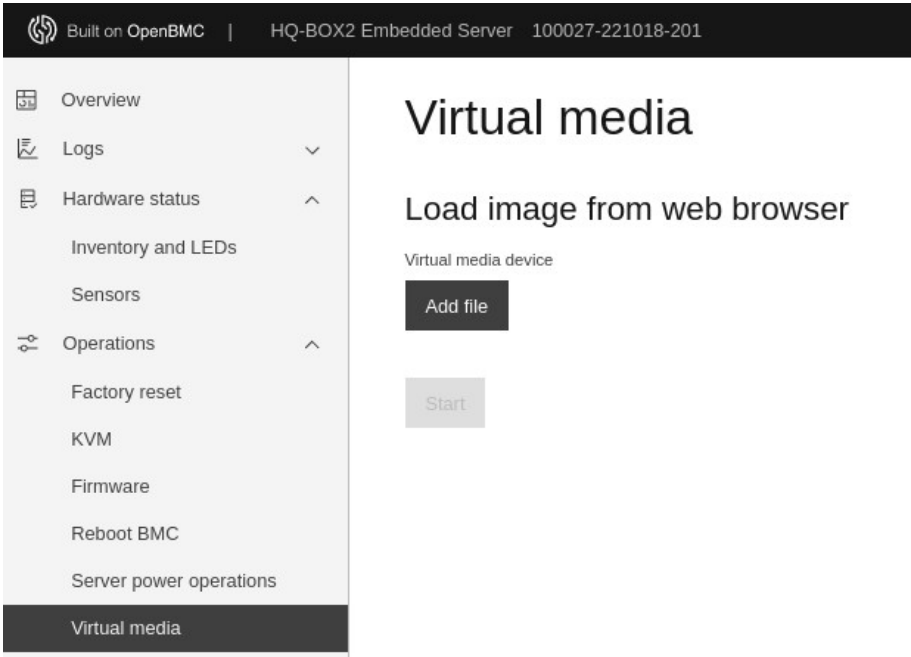
Enter Select Submenu

F9 Setup Defaults

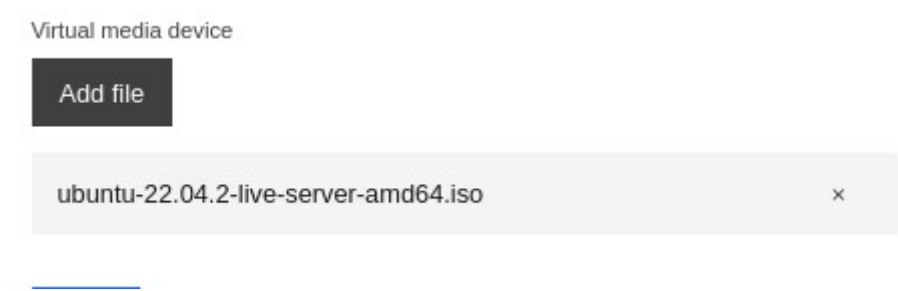
F10 Save and Exit

5.3. Virtual / Remote media

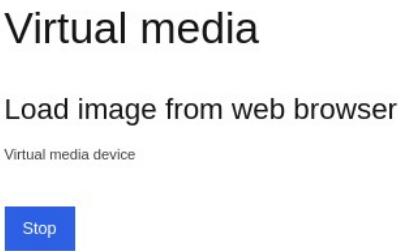
To remotely install an operating system you can use the Virtual media feature.
Navigate to “Operations → Virtual media”:



Pressing “Add file” will open a file manager window to browse for an image file in the admin-PC. As shown in the below example:

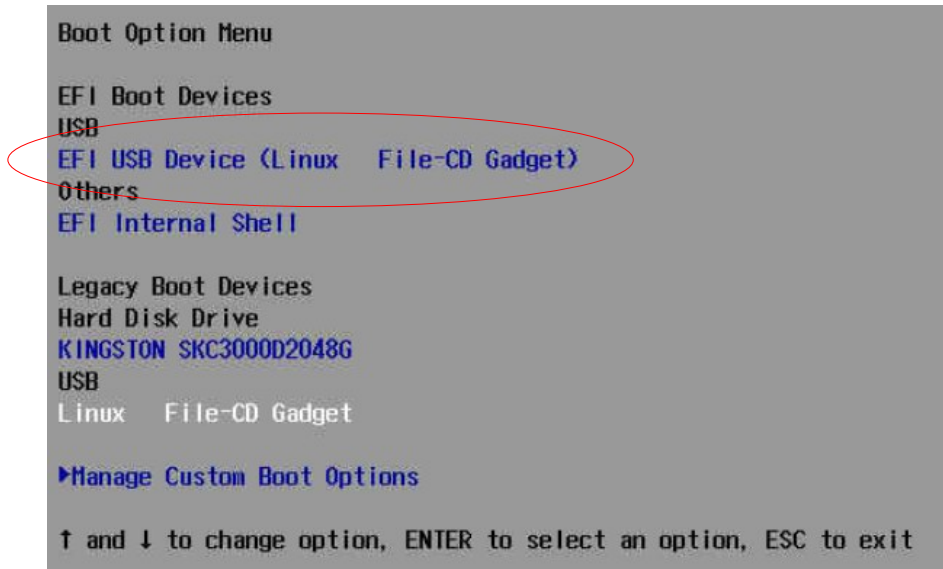


Hit *Start* to mount the media.



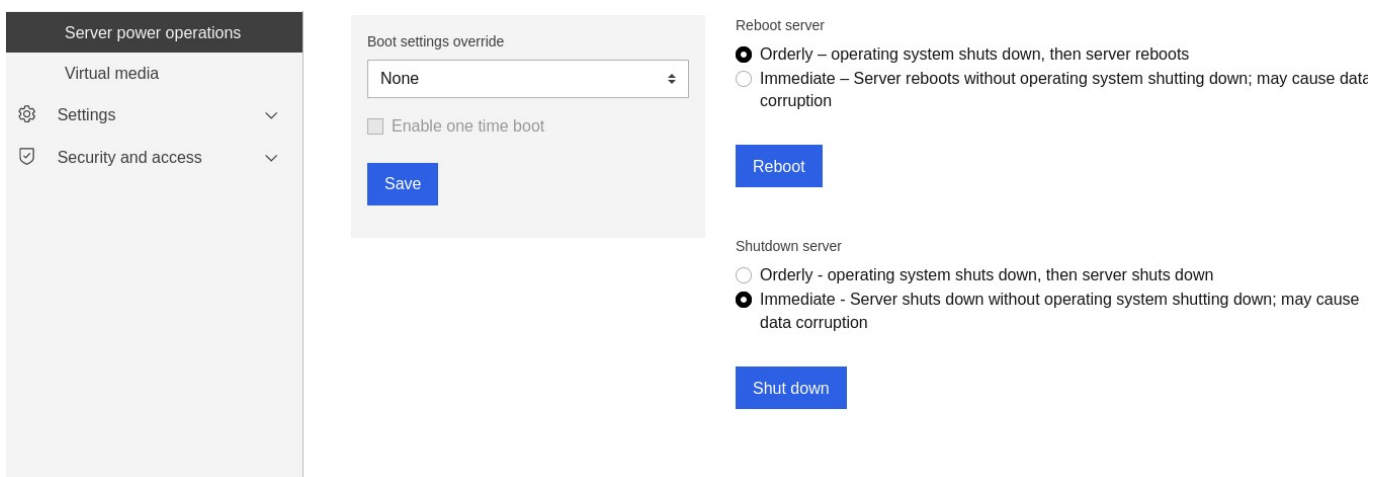
5.4. Boot from the virtual image

1. Select KVM to control the remote HQ-Box2.
2. Enter BIOS "Front Page" and select "Boot Manager"
3. The virtual image will identify as "Linux File-CD Gadget" (don't ask us why..). It may show both in "EFI Boot Devices" and "Legacy Boot devices". Select it from "EFI Boot Devices" and hit *Enter*. The system will boot from the virtual media

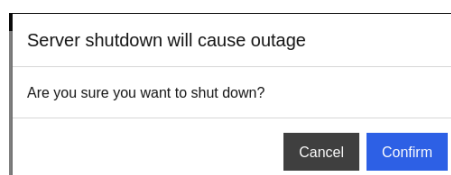


6. BMC Firmware update

1. Using the BMC web interface, select "Server power operations". At the "shutdown server" select the "Immediate" radio button and press "Shut down".



2. Press the "Confirm" button.



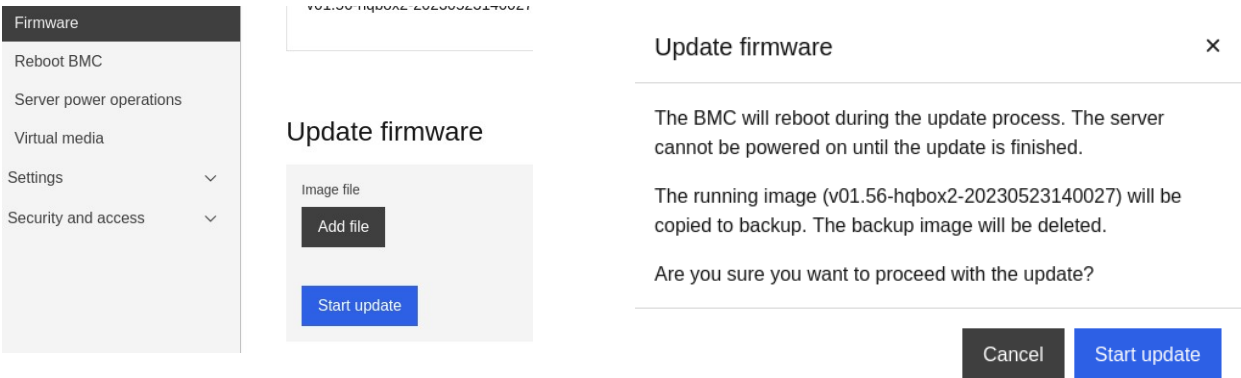
3. Refresh the browser (not the BMC refresh button) until the server status will be "Off":

Server power operations

Current status

Server status
Off

4. Using the BMC web interface, select "Firmware". Press the "Add file" and select the firmware update (a tar image).
5. Press "Start update" and again "Start update" at the confirmation window:



6. After the beginning of the BMC flash programming, the front panel led "GP1" will be turned on for about 10 minutes. Wait for 3 minutes after GP1 turns off before communicating with the BMC. The whole process should take about 15 minutes.
Note: During the update the BMC will disconnect from the network and might get a different address from the DHCP server. As mentioned before, it is recommended to assign a static address to the BMC.

7. Revision Notes

Revision	Date	Revision notes
1.0	20230522	Initial version

8. Copyright Notice

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