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# Updating the BIOS and BMC on the FreeNAS Mini

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iXsystems, Inc.

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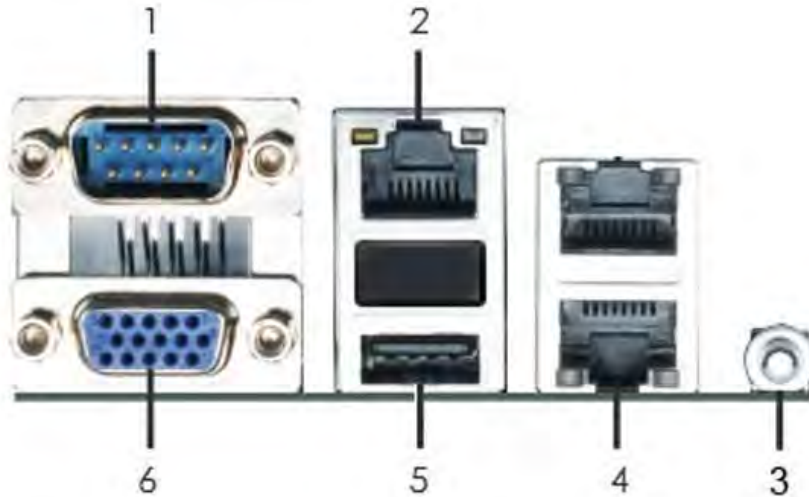
# FreeNAS<sup>®</sup>

These instructions are for updating the BMC (IPMI controller) and the BIOS for the FreeNAS Mini.

You will also need the following to perform these instructions:

- ✓ BMC IP address
- ✓ BMC Username and Password (if you have never used the BMC interface the default username/password is admin/admin)
- ✓ Latest version of Java with appropriate security settings to allow Java Applets to run from your FreeNAS Mini.
- ✓ A USB stick that is at least 16MB in size and formatted to FAT32 for storing the BIOS update.
- ✓ Reliable network connection from your desktop to the FreeNAS Mini that does not include Wifi or Powerline adapters at any interconnecting point.
- ✓ It is highly recommended that your Mini be plugged into a UPS during this process. Any interruption of this process due to a loss of power could render your Mini unusable.

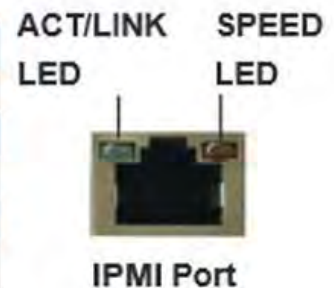
For reference, see the below diagram for the different network adapters on the back of the FreeNAS Mini:



- 1 Serial Port
- 2 IPMI LAN Port\*
- 3 UID Switch
- 4 Gigabit LAN Ports\*\*
- 5 USB 2.0 Ports, 1 Port diverted for internal OS drive
- 6 VGA Port

\* There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.

Dedicated IPMI LAN Port LED Indications			
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	100Mbps connection	Green	1Gbps connection



The IPMI LAN Port (#2 above) must be connected to your network and have a link along with at least one of the Gigabit LAN Ports (#4 above).

If you do not know the BMC IP address you can obtain it from your DHCP server or as follows from the FreeNAS CLI via SSH session or the “Shell” in the FreeNAS WebGUI:

**# kldload ipmi** (if you have already loaded the IPMI module you will get an error “kldload: can’t load ipmi: File exists”)

**# ipmitool lan print 1 | grep IP**

```
[root@freenas] ~# kldload ipmi
[root@freenas] ~# ipmitool lan print 1 | grep IP
IP Address Source      : DHCP Address
IP Address             : 192.168.2.102
IP Header              : TTL=0x00 Flags=0x00 Precedence=0x00 TOS=0x00
Default Gateway IP    : 192.168.2.1
Backup Gateway IP     : 0.0.0.0
[root@freenas] ~# █
```

As you can see, the IP address for my BMC is 192.168.2.102.

If you do not know your BMC password you can reset it with the following steps:

**# kldload ipmi** (if you have already loaded the IPMI module you will get an error “kldload: can't load ipmi: File exists”)

**# ipmitool user list** (this retrieves a list of users)

Find the ID for the ADMIN account. In the below example the ID for the ADMIN account is 2.

```
[root@freenas] ~# ipmitool user list
ID  Name          Callin  Link Auth  IPMI Msg  Channel Priv Limit
2   ADMIN         true   false     false     Unknown (0x00)
```

**# ipmitool user set password <ID> <password>** (this sets the password to whatever you want)

Substitute your ID and the password of choice. Below I reset the password to default (admin) for ID 2.

**# ipmitool mc reset cold** (this resets the IPMI controller)

```
[root@freenas] ~# ipmitool user set password 2 admin
[root@freenas] ~# ipmitool mc reset cold
Sent cold reset command to MC
```

It will take about 2 minutes for the BMC interface to boot back up and be accessible.

# Updating the BMC

1. Go to <http://www.asrockrack.com/general/productdetail.asp?Model=C2750D4I#Download> and download the latest "Instant Flash" version of the BIOS. Also download the latest BMC file, which is 00.19.00 at the time of this guide as shown below.

The screenshot shows the ASRock Rack website for the C2750D4I server. The page features a navigation menu with links for About, Contact Us, Products, Support, News, Where to Buy, and Dealer Zone. The main content area displays the product name "C2750D4I" and a list of specifications:

- Intel Avoton C2750 Octa-Core Processor
- DDR3 1600/1333 Dual-channel Max. 64GB
- 2 SATA3 6.0Gbps, 4 SATA2 3.0Gbps by C2750
- 4 x SATA3 6.0 Gb/s by Marvell SE9230, 2 x SATA3 6.0 Gb/s by Marvell SE9172
- Dual Intel i210 Gigabit LAN ports (with Teaming function)
- 3 x USB 2.0 ports (2 rear ports + 1 via headers or 1 rear ports + 2 via headers controlled by USB\_SEL1 and USB\_SEL2 jumper)
- 1 x PCI-E x8 slot

Below the specifications, there are buttons for "Specifications", "Download", "Manual", "Memory QVL", and "HDD QVL". The "Download" section is titled "Download BIOS" and includes a warning: "Please read the information below before downloading or updating your BIOS. We don't recommend users to update the BIOS if their system is already running normally. ASRockRack assumes no responsibility for any damages caused by improper operations of downloading or updating the BIOS."

Version	Date	Update BIOS Content	Size	Description	Download From
2.50	9/3/2014	Instant Flash	3.06MB	Improve system compatibility.	Asia Europe USA China
2.50	9/3/2014	BIOS	3.10MB	Improve system compatibility.	Asia Europe USA China
2.50	9/3/2014	Windows®	3.61MB	Improve system compatibility.	Asia Europe USA China
00.19.00	9/3/2014	BMC	13.03MB	1. Improve system compatibility. 2. Improve BMC reset behavior. 3. Network Bonding Configuration default set to disable. 4. Modified HW monitor threshold table.	Asia Europe USA China

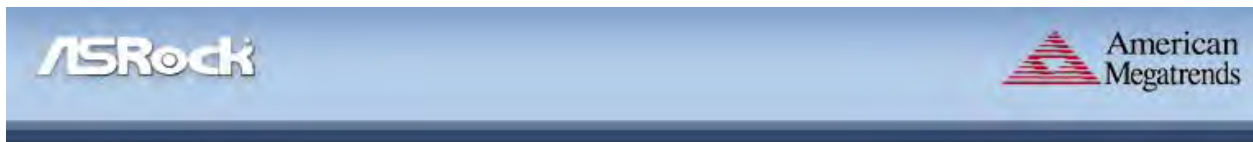
2. Use your favorite program to decompress the downloaded ZIP files being careful not to mix them up. In this example the following files were extracted:

BIOS file: C2750D4I2.50

BMC file: C2550D4I\_V\_00\_19\_00.ima

Note that the file says C2550D4I despite the motherboard being a C2750. This is because the same BMC controller is used for both the C2550D4I and C2750D4I motherboards.

3. Log into the BMC interface with your web browser (Firefox and Chrome preferred) using the IP address for the BMC controller and the appropriate username and password.




**Username:**  \*

**Password:**  \*

[Forgot Password?](#)

**Language:** English ▾

**Required Browser Settings**

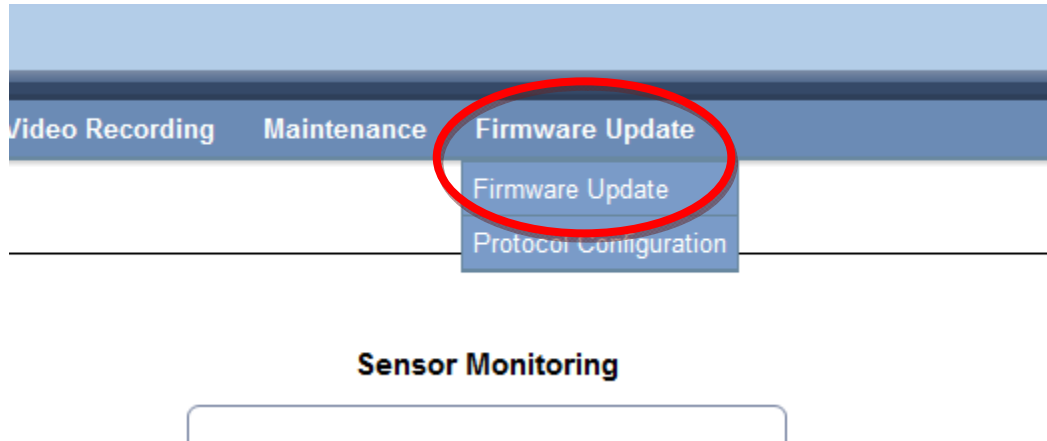
1. Allow popups from this site ✓
2. Allow file download from this site.  
(How to )
3. Enable javascript for this site ✓
4. Enable cookies for this site ✓

It is recommended not to use Refresh, Back and Forward options of the browser.

- Once in the BMC interface check your current version number. It can be found on the left side of the page. If the version listed is the version on the AsRock website no BMC update is needed and you can skip to the section on updating the BIOS. If the version listed is older than the version you downloaded then continue with this procedure.



- Click on the "Firmware Update" menu followed by the "Firmware Update" menu item.





- Click on the “Preserve all Configuration” checkbox if you wish to save your BMC configuration. For the vast majority of users that do not log into the BMC regularly and do not have custom settings in the BMC this box should be left unchecked.

Note: These settings are not related to the FreeNAS configuration file.

- Click the “Enter Update Mode” button in the lower right corner of the page.

ASRock American Megatrends

admin (Administrator) Refresh Print Logout

Dashboard FRU Information Server Health Configuration Remote Control Auto Video Recording Maintenance Firmware Update HELP

### Firmware Update

Upgrade firmware of the device. Press "Enter Update Mode" to put the device in update mode.

The protocol information to be used for firmware image transfer during this update is as follows. To configure, choose 'Image Transfer Protocol' under Configuration menu.  
Protocol Type : HTTP/HTTPS

**WARNING:** Please note that after entering update mode widgets, other web pages and services will not work. All open widgets will be closed automatically. If upgrade process is cancelled in the middle of the wizard, the device will reset.

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.  
All configuration items below will be preserved by default during a restore factory default operation. Click "Enter Preserve Configuration" to modify the Preserve status settings.

#	Preserve Configuration Item	Preserve Status
1	SDR	Overwrite
2	FRU	Overwrite
3	SEL	Overwrite
4	IPMI	Overwrite
5	Network	Overwrite
6	NTP	Overwrite
7	SNMP	Overwrite
8	SSH	Overwrite
9	KVM	Overwrite
10	Authentication	Overwrite

Enter Preserve Configuration Enter Update Mode

- You will be presented with a warning that you should not perform any other tasks until the firmware upgrade is complete and the device is rebooted. Click the “OK” button to continue.

You will not be able to perform any other tasks until firmware upgrade is complete and the device is rebooted.  
Click Ok if you want to enter the update mode?

OK Cancel

9. The firmware update window will change and the BMC will begin preparing for a firmware update. Then the window will change and let you browse to the firmware update file. Click on the “Browse...” button and select the firmware update for the BMC that you extracted previously. In this example, the file “C2550D4I\_V\_00\_19\_00.ima” is the update to be applied. After selecting the file click the “Upload” button.

## Firmware Update

Upgrade firmware of the device. Press “Enter Update Mode” to put the device in update mode.

The protocol information to be used for firmware image transfer during this update is as follows. To configure, choose 'Image Transfer Protocol' under Configuration menu.  
**Protocol Type** : HTTP/HTTPS

**WARNING:** Please note that after entering update mode widgets, other web pages and services will not work. All open widgets will be closed automatically. If upgrade process is cancelled in the middle of the wizard, the device will reset.

- Closing all active client requests.
- Preparing device for firmware upgrade.
- Uploading firmware image. ↻
- Verifying firmware image.
- Flashing firmware image.
- Resetting Device.

Upload Firmware

Please select the firmware image to flash

Browse... C2550D4I\_V\_00\_19\_00.ima

Upload Cancel

Enter Preserve Configuration

Enter Update Mode

10. The window will change and will present you with your current version and the version to be installed. If you agree with the changes click the “Proceed” button.

## Firmware Update

Upgrade firmware of the device. Press “Enter Update Mode” to put the device in update mode.

The protocol information to be used for firmware image transfer during this update is as follows. To configure, choose 'Image Transfer Protocol' under Configuration menu.  
**Protocol Type** : HTTP/HTTPS

**WARNING:** Please note that after entering update mode widgets, other web pages and services will not work. All open widgets will be closed automatically. If upgrade process is cancelled in the middle of the wizard, the device will reset.

- Closing all active client requests.
- Preparing device for firmware upgrade.
- Uploading firmware image.
- Verifying firmware image. ↻
- Flashing firmware image.
- Resetting Device.

Firmware Version

Current Image Version: 0.14.0  
New Image Version: 0.19.0

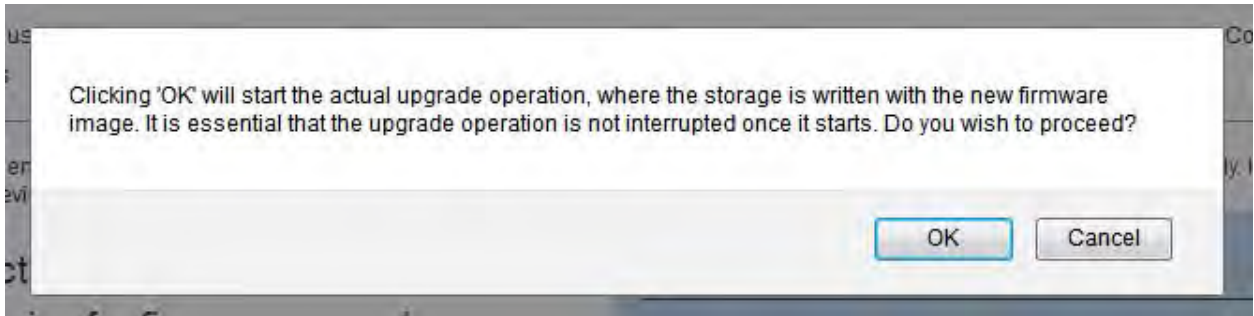
The firmware image has been verified. The uploaded image is a different version of the existing device firmware.

Proceed Cancel

Enter Preserve Configuration

Enter Update Mode

11. Click "OK" to start the upgrade.



12. The website will change and the BMC will install the update. The actual process of updating takes about 2 minutes. Once the update is complete it will instruct you to close your browser and open a new browser session to reconnect to the device.

### Firmware Update

Upgrade firmware of the device. Press "Enter Update Mode" to put the device in update mode.

The protocol information is displayed below. The protocol type is **Device has been reset**.

**Device has been reset**

The device has been reset. Please close this browser session and open a new browser session to reconnect to the device.

The device may take about a minute to boot up.

WARNING: Please do not interrupt the process in the middle of the upgrade.

- Closing all active client requests.
- Preparing device for firmware upgrade.
- Uploading firmware image.
- Verifying firmware image.
- Flashing firmware image. (Complete...)
- Resetting Device.

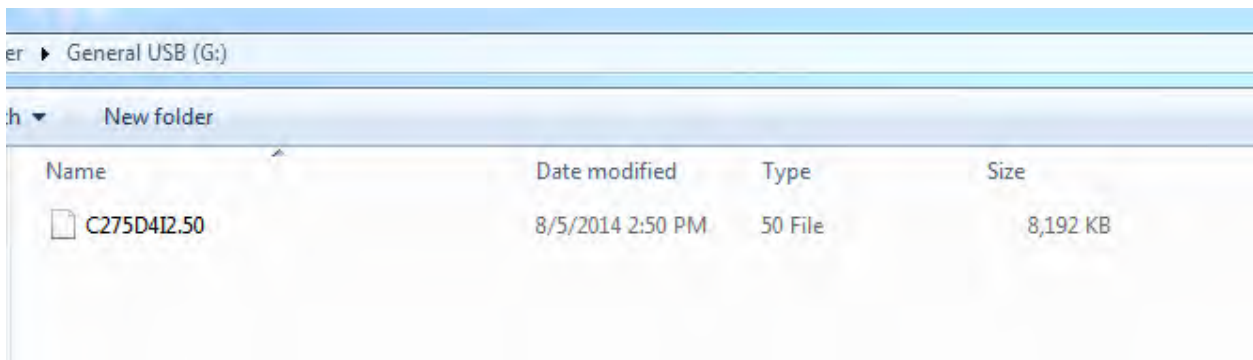
13. Once you have waited approximately 2 minutes close your browser session and open a new one. Go to your BMC interface address and log in. If the update completed successfully the version listed in the top left should now show the latest version.



1. Your BMC has now been updated to the latest version.

# Updating the BIOS

2. Update the BMC to the latest version if you intend to use the BMC for the BIOS upgrade process. If you have a keyboard and monitor connected to the machine locally then you can perform all of the following steps locally after you've copied the BIOS update to the USB stick.
3. Insert your FAT32 formatted USB stick into your desktop. Copy the BIOS update file to your USB stick on the root of the drive. Do not place the file inside any folders. In my example I copied the file C2750D4I2.50.



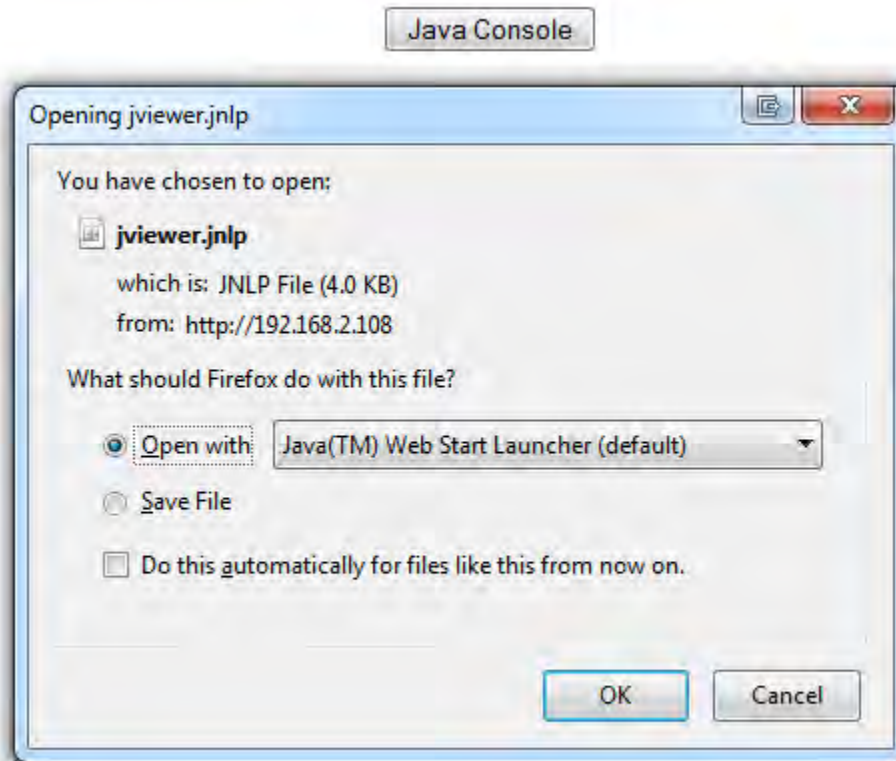
4. Eject the USB stick from your desktop and insert it into the front of the FreeNAS Mini. If you cannot fit your USB stick in the front you can plug it into the back, but it must be connected to the bottom USB port in the back. The top USB port on the back is disabled.
5. Shutdown the FreeNAS Mini from the WebGUI if not already powered off.
6. Either access the keyboard and monitor locally at the Mini or connect to the BMC Webpage in the same fashion as you did in steps 3 for the BMC update. If you are doing this locally you can skip to step 9.
7. Once in the BMC Webpage click on the "Remote Control" menu and then click on the "Console Redirection" menu item.



Dashboard gives the overall information about the status of the device and rem

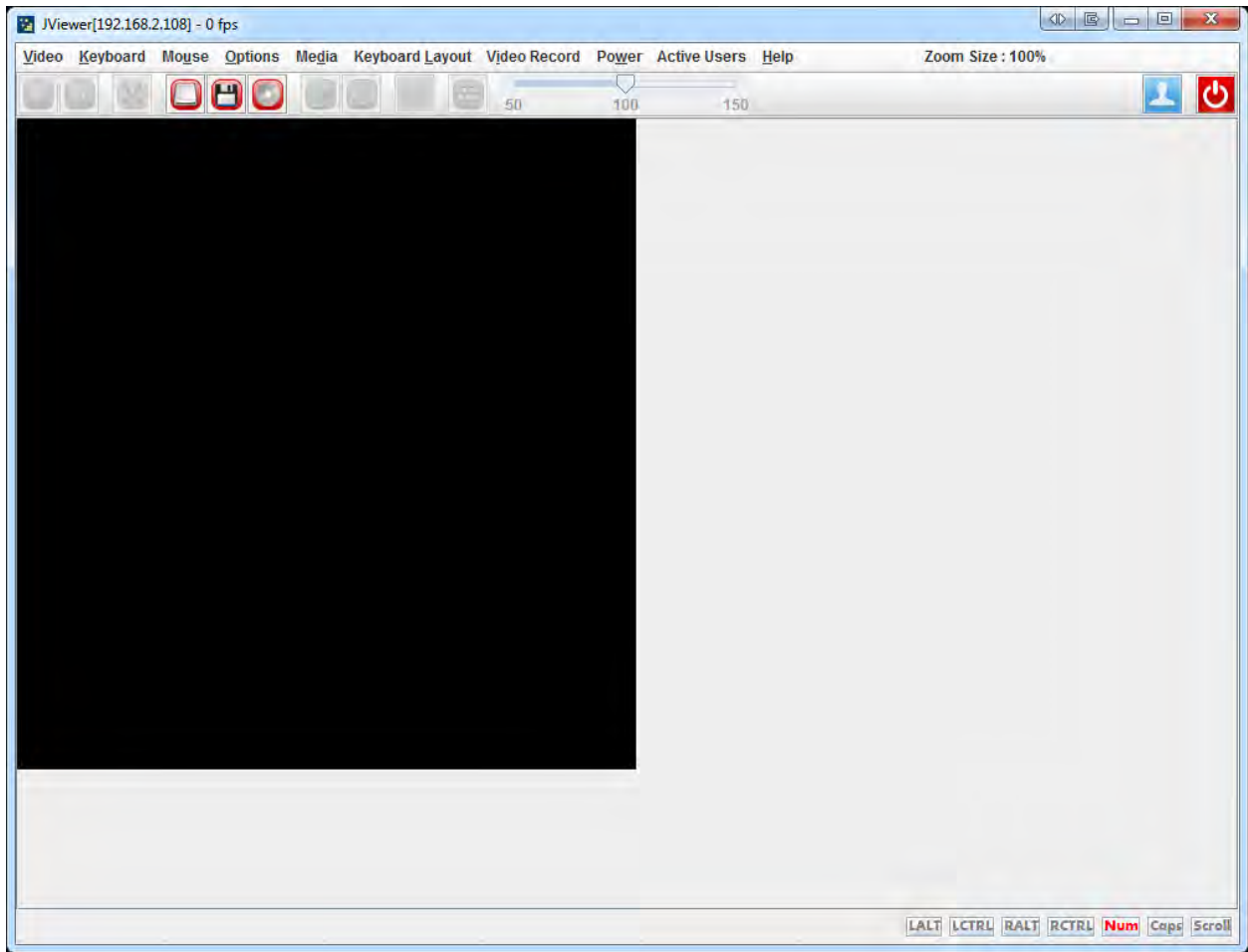
## Device Information

8. Click on the “Java Console” button. A Java .jnlp file will download. Open it to access the remote console.

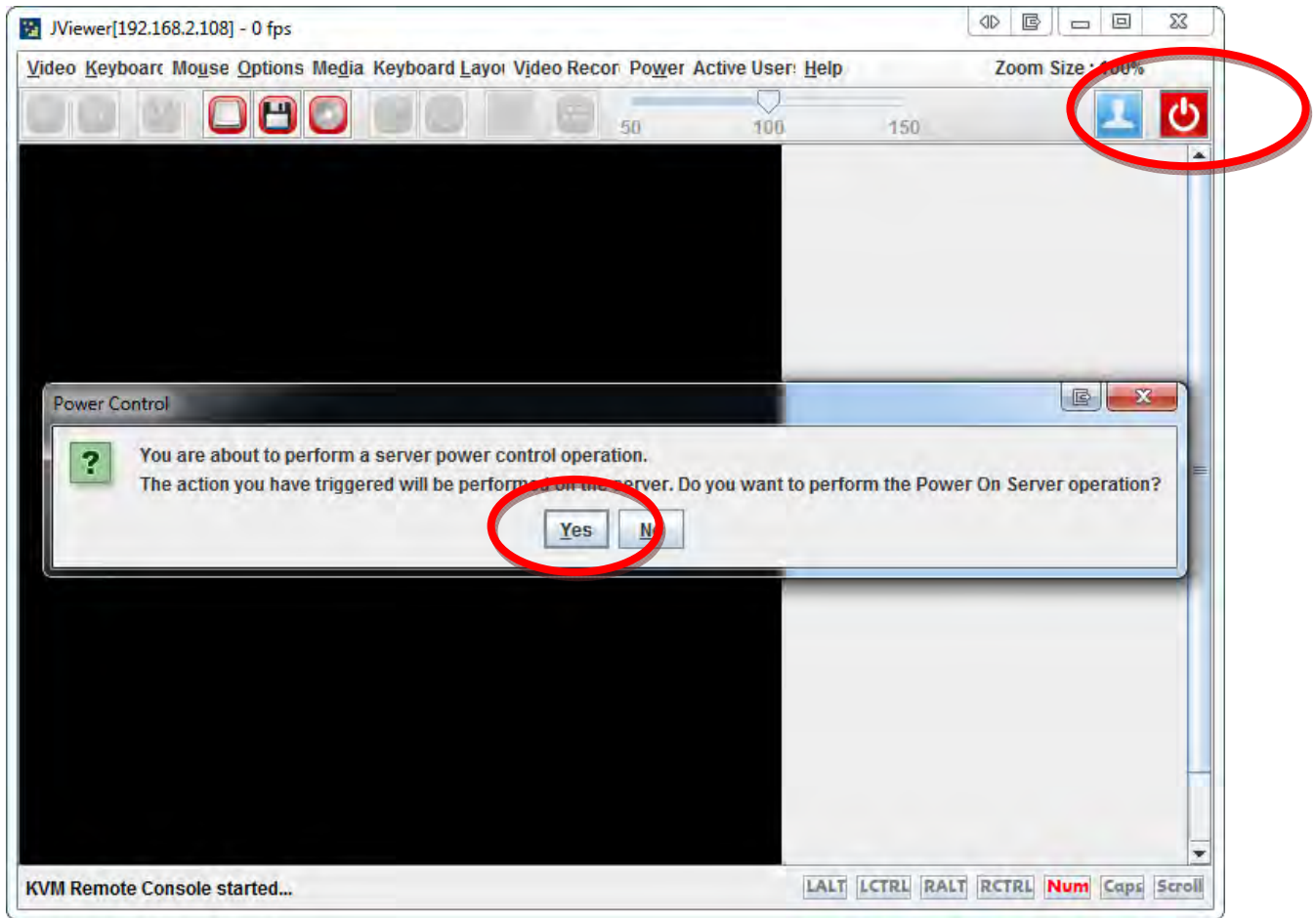


Note: If you get any error that your security settings are prohibiting the Java applet from running you will need to add the BMC IP address to the allowed list for Java.

9. After the Java Launcher runs you will see the remote console. It will look like the below picture.



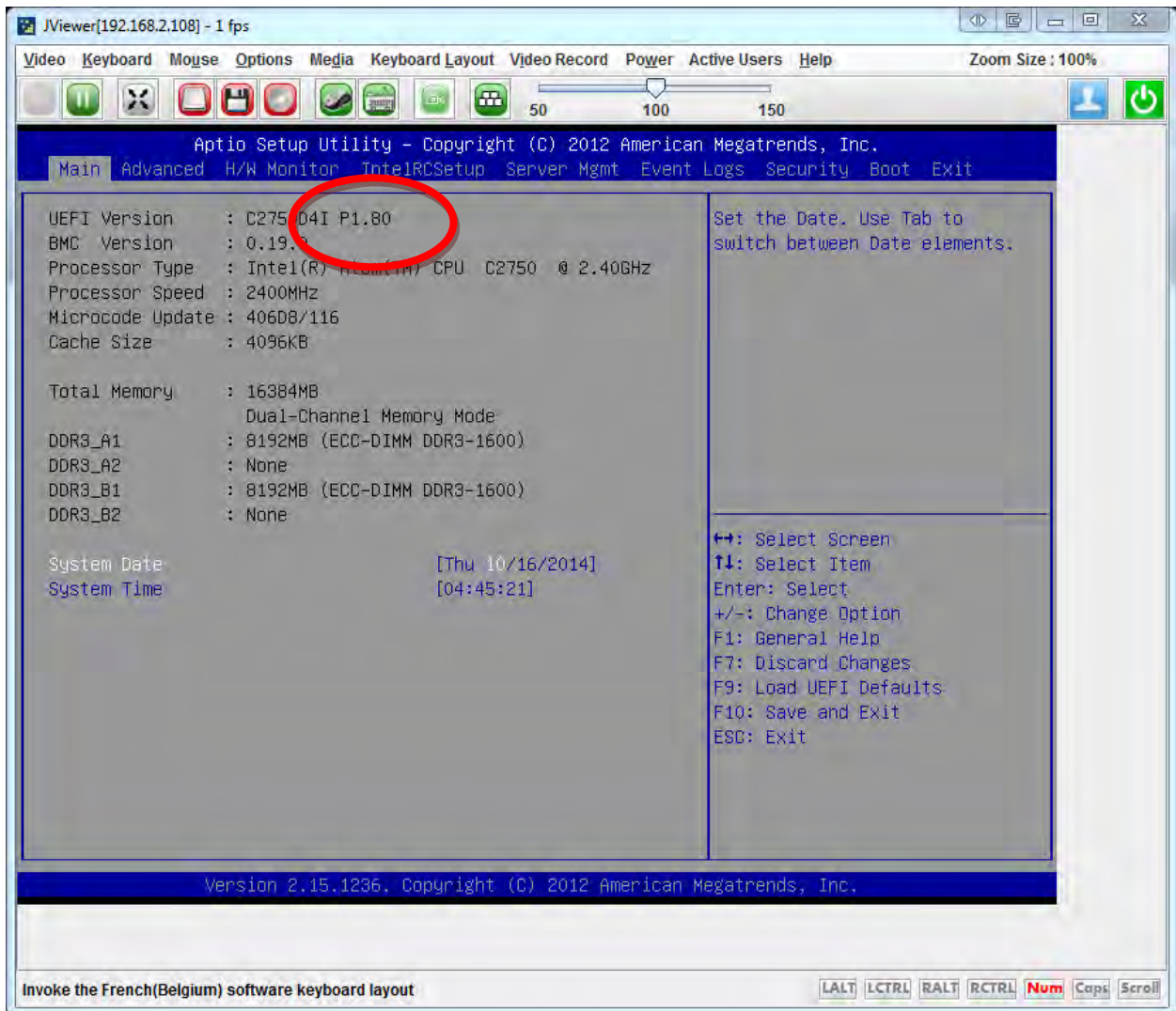
10. Power on the machine by either pressing the power button on the front of the FreeNAS Mini or by pressing the red power button on the top right corner of the Remote Console. Press the “Yes” button to power-on the FreeNAS Mini.



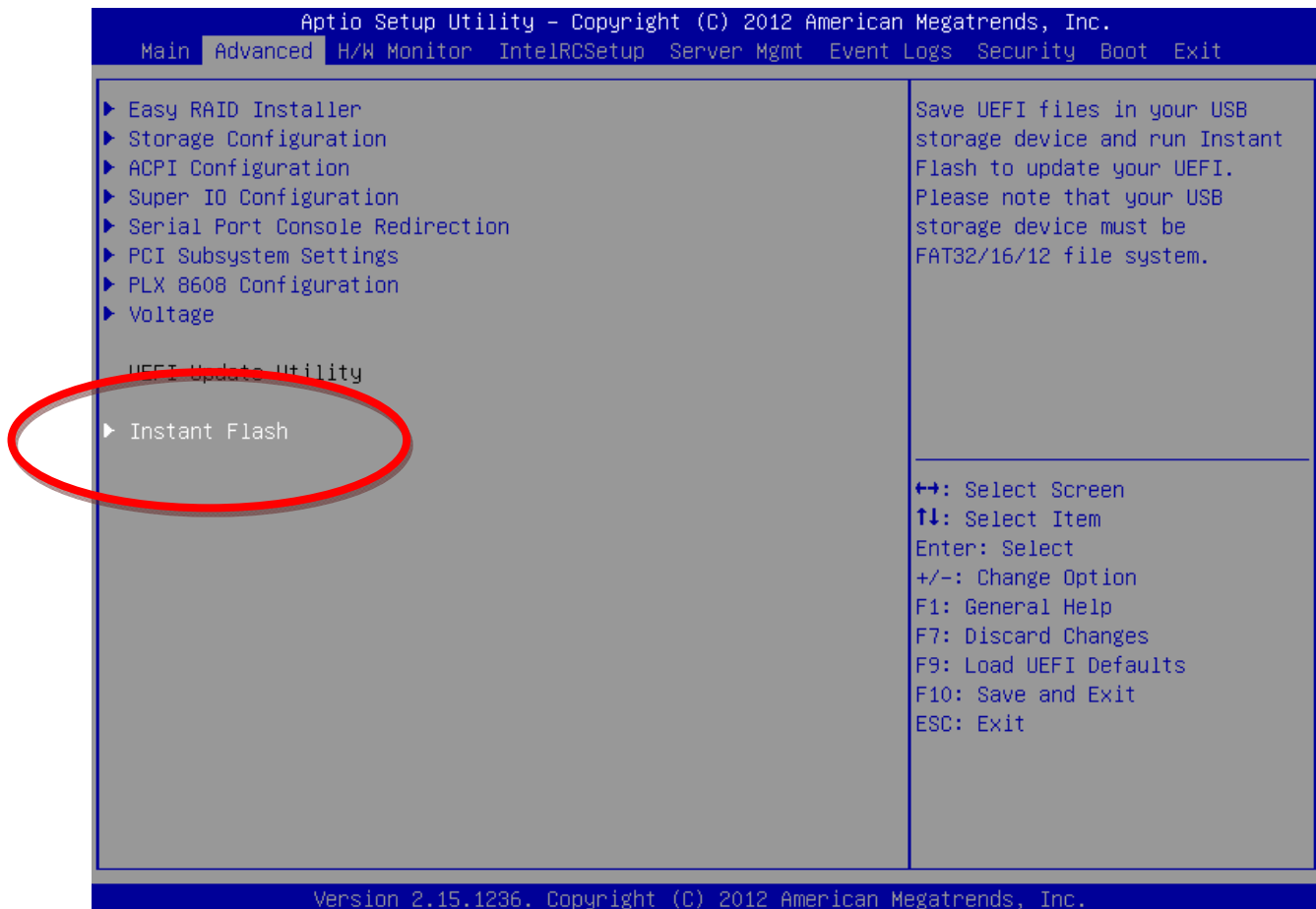


11. The FreeNAS Mini will power-on. Begin pressing the “Delete” key repeatedly until you are in the BIOS. The below picture shows what the BIOS looks like. Look at the UEFI version number and see if the version is older than the version you downloaded. If the version numbers are the same then no BIOS update is necessary. In this case I will be updating from 1.80 to 2.50.

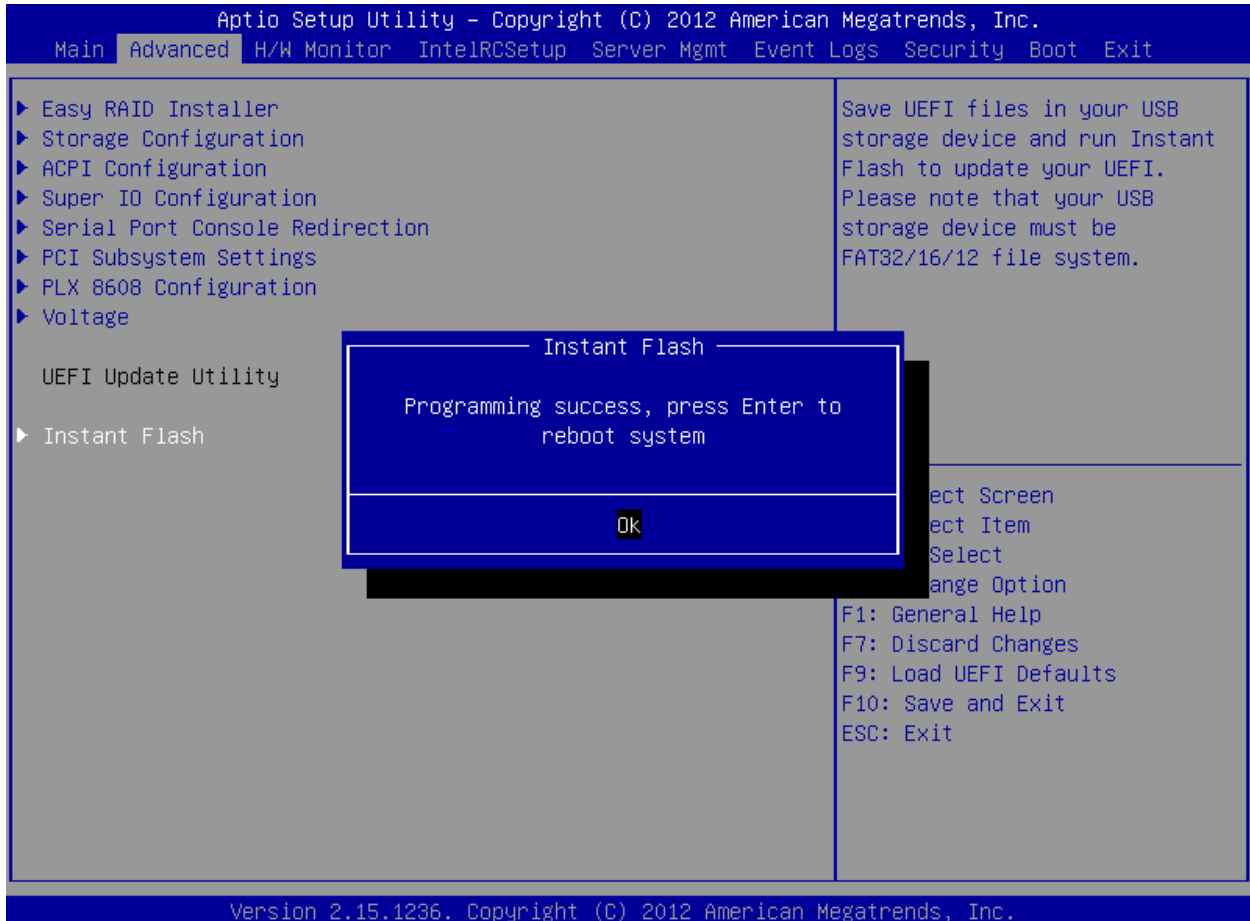
Note: If you do not press the “Delete” key in time FreeNAS will bootup. In this case you will need to go into the FreeNAS WebGUI and shutdown the system and try again.



12. Using the arrow keys go to the Advanced menu and then scroll down to the “Instant Flash” item. When it is highlighted press “Enter”.



13. The file you copied should be listed. Select the file and press “Enter” to flash the BIOS. The BIOS will update and you will eventually be presented with the below screen.



14. Your BIOS has now been updated to the latest version.