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CDE460/470 IPMI Firmware Upgrade

**Details the process of upgrading CDE460/470 IPMI firmware to v3.33 in the field
Field Notice #63901**

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Modification History

Revision	Date	Originator	Comments
1	10/22/2014	Scott Parry	Initial Draft
1.01	10/24/2014	Scott Parry	Add the Linux upgrade option
1.02	10/30/2014	Scott Parry	Added the steps to reset the BMC after the IPMI FW upgrade

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1 Background

Current CDE460/470 systems utilize an Intelligent Platform Management Interface (IPMI) infrastructure that monitors and manages the health of the system. This is implemented using embedded IPMI firmware running within the Baseboard Management Controller (BMC) system chip on the motherboard. The current version of IPMI firmware used on the CDE460/470 is v3.17.

There is currently one (1) known issue associated with the IPMI / BMC subsystem and the IPMI FW version 3.17.

1.1 sdt (Superdoctor II) randomly reports incorrect sensor values.

Technical analysis:

- Superdoctor II will report incorrect sensor values which cause faults warnings in SDT and CDSM.

Example output from running “sdt” at the CDE460 console:

```
SuperDoctor II - Linux version 2.88(120726)
Copyright(c) 1993-2012 by Super Micro Computer, Inc. http://supermicro.com/
*****
Monitored Item      High Limit  Low Limit   Status
-----
Fan1 Fan Speed           300    4299
Fan2 Fan Speed           300    4753
Fan3 Fan Speed           300    4687
Fan5 Fan Speed           300    4530
CPU1 Vcore Voltage      1.49    0.53    0.82
CPU2 Vcore Voltage      1.49    0.53    4.08  Warning!
```

In the above case the value of 4.08 volts is not correct and has created a faults warning. These incorrect values and warnings are also reported through CDSM.

Root Case: IPMI FW sensor reporting bug fixed in the IPMI FW v3.33. We have validated this new firmware internally at Cisco. IPMI v3.33 firmware will be shipped on all new CDE460/470 systems. Please follow the procedure described in Section 2 to upgrade the IPMI firmware to v3.33.

2 IPMI Firmware Upgrade Process

There are three processes for the IPMI firmware update:

- Using the Linux IUpdate utility, section 2.1
- Using a bootable USB stick, Section 2.2
- Using the CDE460/470's dedicated IPMI Ethernet port, Section 2.3

2.1 IPMI Firmware Upgrade process using the Linux IUpdate utility

1. Download the IPMI v3.33 firmware files to a remote desktop:
 - These are contained in the **ipmi333.zip** downloaded from the "IPMI Firmware 3.33 Upgrade Download links are provided below: " link contained in FN #63901:
 - i. Unzip **ipmi333.zip** to a temporary folder
 - ii. Note the location of the temporary folder

2. At the target server run the following command:

- a. cd to the temporary directory
- b. chmod 555 ipmiup.sh
- c. ipmiup.sh

- i. This bash file will do the following:

```
"chmod 555 IUpdate"
```

```
"IUpdate -f IPMI_333.bin -i kcs -r y"
```

These commands will take approximately 10 minutes to complete.

3. The IPMI FW update is now complete.

```
Please wait....If the FW update fails. PLEASE WAIT 5 MINS AND REMOVE THE AC...  
  
Update progress:100 %  
Update Complete, Please wait for BMC reboot, about 1 min  
The update has completed  
[root@Utah726 Linux1.21]#
```

4. It is recommended that the BMC/IPMI system be reset after the upgrade by removing power from the power supplies waiting 10 seconds then replacing the power.

2.2 IPMI Firmware Upgrade Process using a bootable USB stick

Requirements:

- PC running Windows operating system
- USB stick (512MB or larger)
- Keyboard and monitor or direct I/O access., i.e. KVM

Please follow the process below in order to upgrade the IPMI firmware to v3.33.

1. Create a FreeDOS USB Boot stick using the following procedure:
 - a) Insert a blank USB memory stick into your Windows based PC
 - b) Download and save the “rufus” USB boot device creator from the following URL:
<http://rufus.akeo.ie>
 - c) Start rufus by opening the “rufus_vx.x.x.exe” file. (note: this document was created using rufus v1.2.0.183)
 - d) Insert a USB stick to be formatted with FreeDOS
 - e) Select the “Device” to use as the FreeDOS boot device
 - f) File system: “FAT32”
 - g) Enter a “New volume label”, i.e. IPMIUP
 - h) Select “Quick Format”
 - i) Select Create a bootable disk using: “FreeDOS”
 - j) Click on “Start”, the Boot stick format should proceed

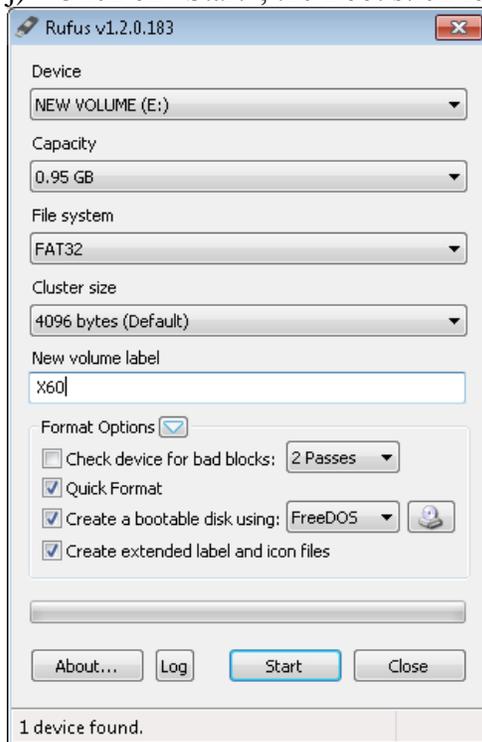


Figure 1: Screenshot of the Rufus utility

2. After the formatting process is complete, you will need to copy the IPMI firmware upgrade utility and associated firmware image onto the USB DOS stick.
 - These are contained in the **ipmi333.zip** downloaded from the “IPMI Firmware 3.33 Upgrade Download links are provided below: ” link contained in FN #63901:
 - i. Unzip **ipmi333.zip** to a temporary folder
 - ii. Note the location of the temporary folder
3. Remove the USB DOS stick, and insert into any of the available USB ports on the back of the CDE460/470.

4. Connect a monitor and keyboard or KVM to the back of the CDE460/470.
5. Boot to the USB DOS stick.
To accomplish this, simply reboot the CDE460/470; it should automatically boot to the USB DOS stick.

(All CDE460/470 systems are pre-configured at the factory to first boot to external USB devices, followed by the internal compact flash. If the system doesn't automatically boot to the USB DOS stick, please verify the boot device priority in the BIOS.)

6. After the system boots into a DOS prompt, initiate the IPMI firmware upgrade by executing the **IPMIUP.BAT** DOS batch file.

```
C:\> IPMIUP.bat
```

The following will be displayed:

```
Update IPMI FW to v3.33
Current and proposed IPMI BIOS update versions
... etc ...
```

```
Updating the IPMI FW to v3.33
... etc ...
```

The entire firmware upgrade should take approximately 10 minutes to complete. Please wait for a positive acknowledge from the utility prior to rebooting.

Please DO NOT power-cycle and/or interrupt the firmware upgrade process. Doing so may result in the system being placed into a non-recoverable state.

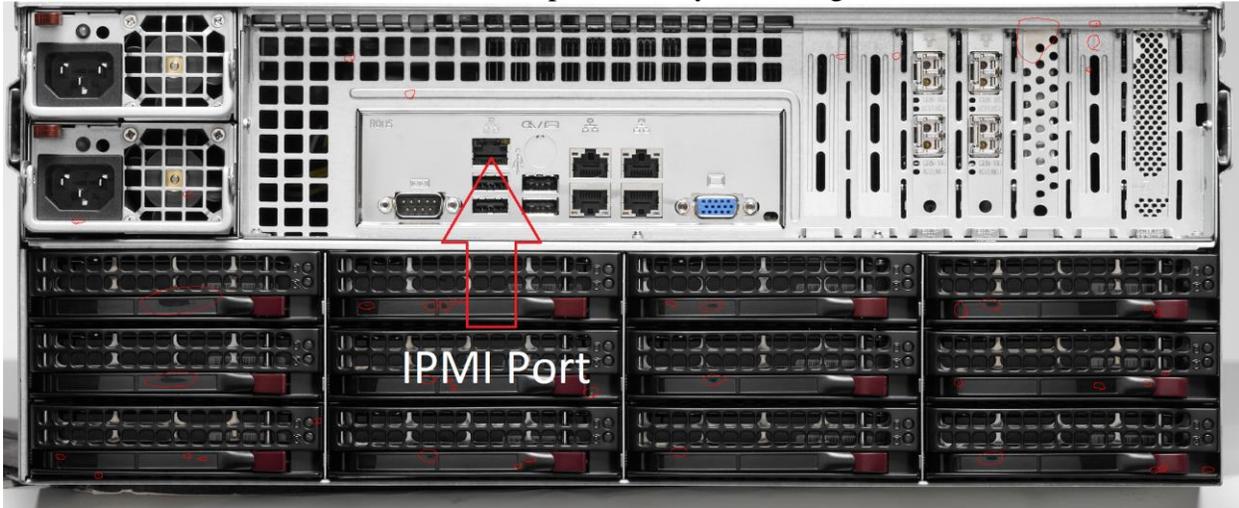
7. After the IPMI firmware upgrade completes, it is recommended that the BMC/IPMI system be reset after the upgrade by removing power from the power supplies waiting 10 seconds then replacing the power. Of course, be sure to first remove the USB DOS stick prior to power-cycling.

2.3 IPMI Firmware Upgrade Process using the dedicated IPMI Ethernet port

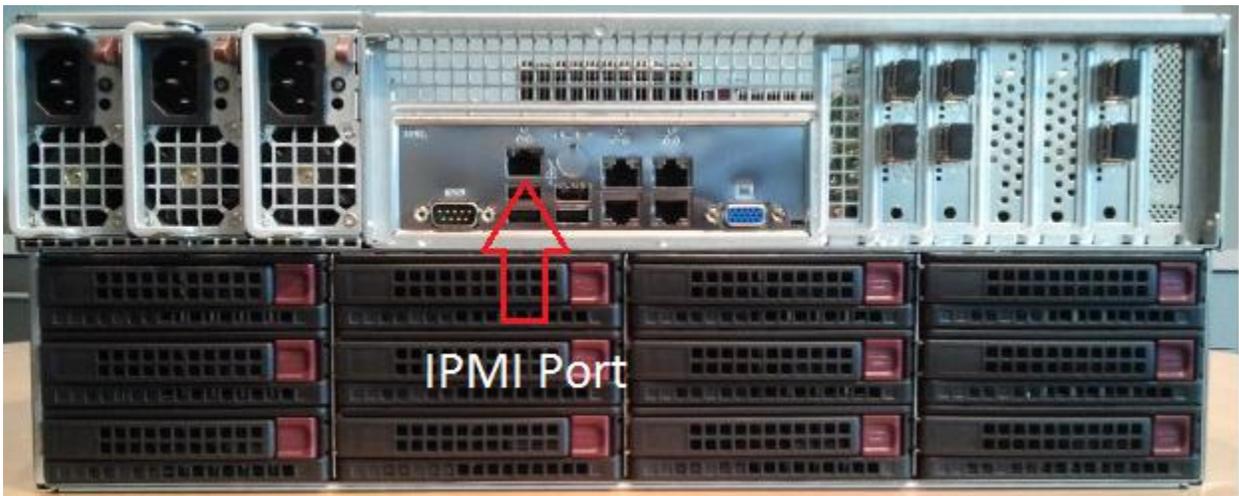
1. Download the IPMI v3.33 firmware files to a remote desktop:
 - These are contained in the **ipmi333.zip** downloaded from the “IPMI Firmware 3.33 Upgrade Download links are provided below:” link contained in FN #63901:
 - ii. Unzip **ipmi333.zip** to a temporary folder
 - iii. Note the location of the temporary folder
2. Configure the dedicated Ethernet port of the CDE460/470 in the system BIOS, if already configured skip to step 3.

- a. Reboot the CDE460/470 system
- b. Press the key during post to enter the BIOS setup utility
- c. Select the “IPMI Configuration”
- d. Set your IP Address and attributes
- e. Press <ESC>, then press <CNTL><F10>, to save and exit

3. Connect an Ethernet cable to the IPMI port and to your management network



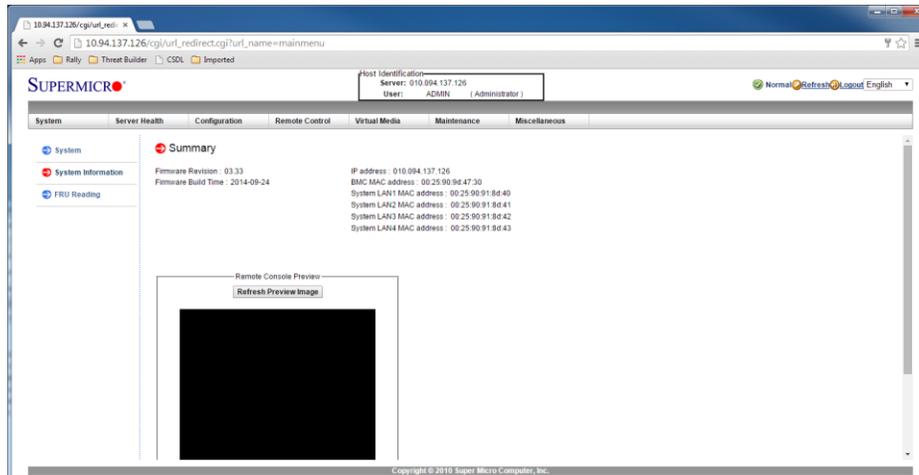
CDE460 IPMI Port Location



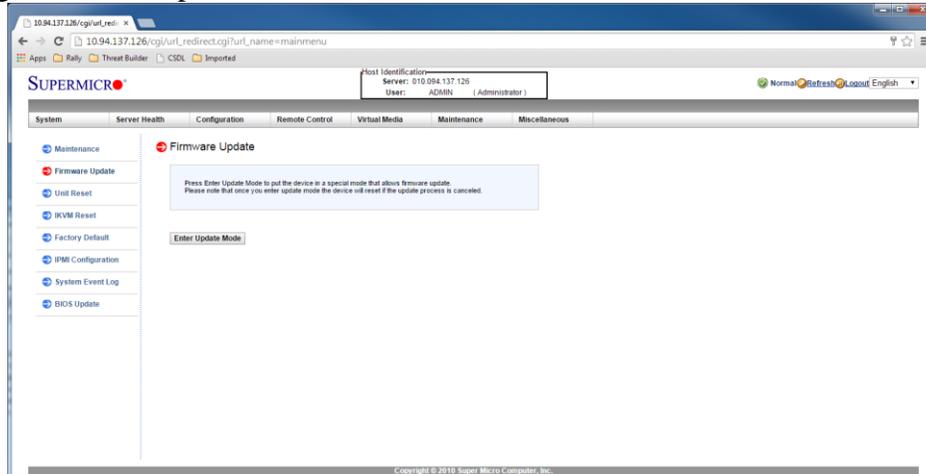
CDE470 IPMI Port Location

4. From a remote desktop open Superdoctor web interface:
 - a. Open a web browser
 - b. Enter the IP Address that you set in step 2.1.2.d in the URL address line, This will start the Superdoctor web interface
 - c. Login to Superdoctor, the default user name is “ADMIN” and the password is “ADMIN”
 - d. Enter the username and password
 - e. Click on the “Login” button

f. Select the “Maintenance” tab

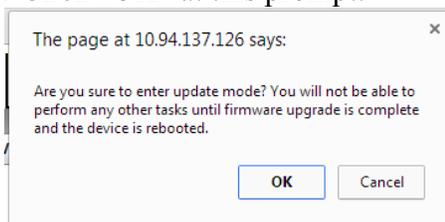


g. Click on “Update Firmware”

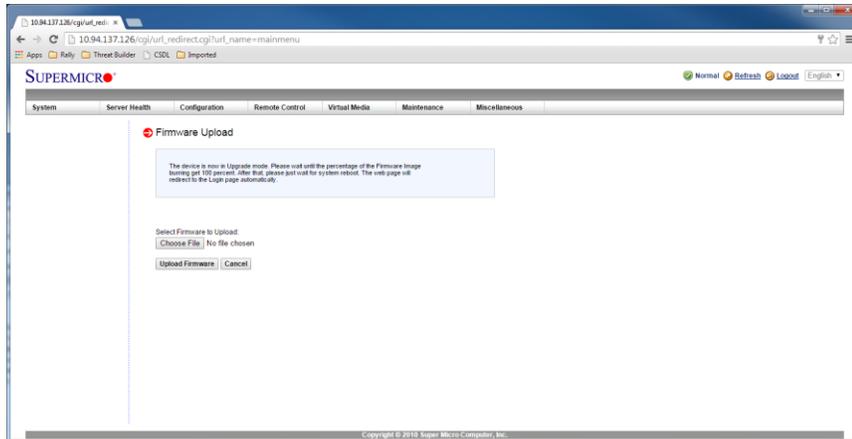


h. Click on “Enter Update Mode”

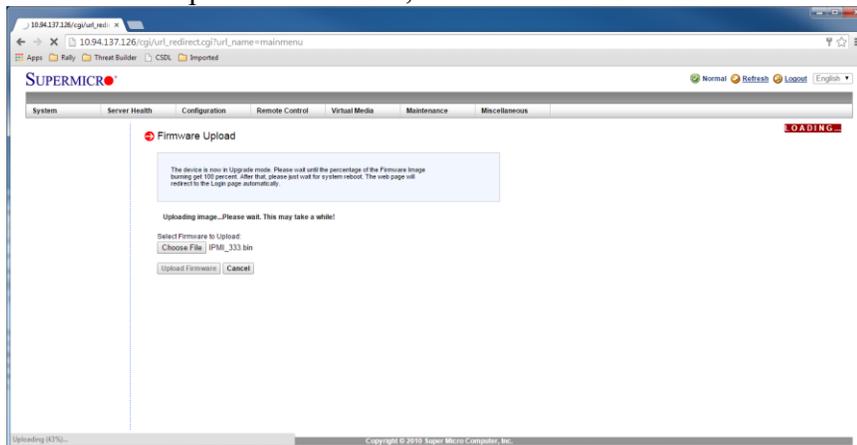
i. Click “OK” at this prompt:



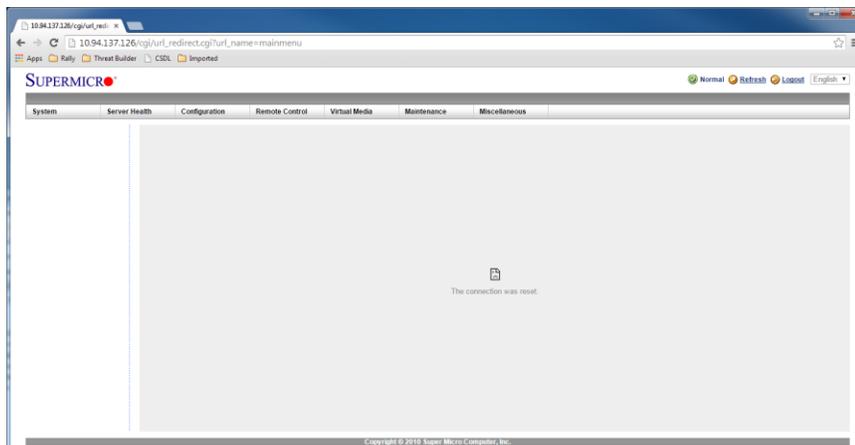
j. Select the “Choose File” button under the “Select Firmware to Upload” heading, browse the directory where the downloaded zip files and select the file named “IPMI_333.bin”



k. Click on “Upload Firmware”, this will take a few minutes to complete



l. The IPMI FW is now updating and the screen will display that the connection was reset



- m. Once the upgrade has completed you will be able to login again.
- n. It is recommended that the BMC/IPMI system be reset after the upgrade by removing power from the power supplies waiting 10 seconds then replacing the power.

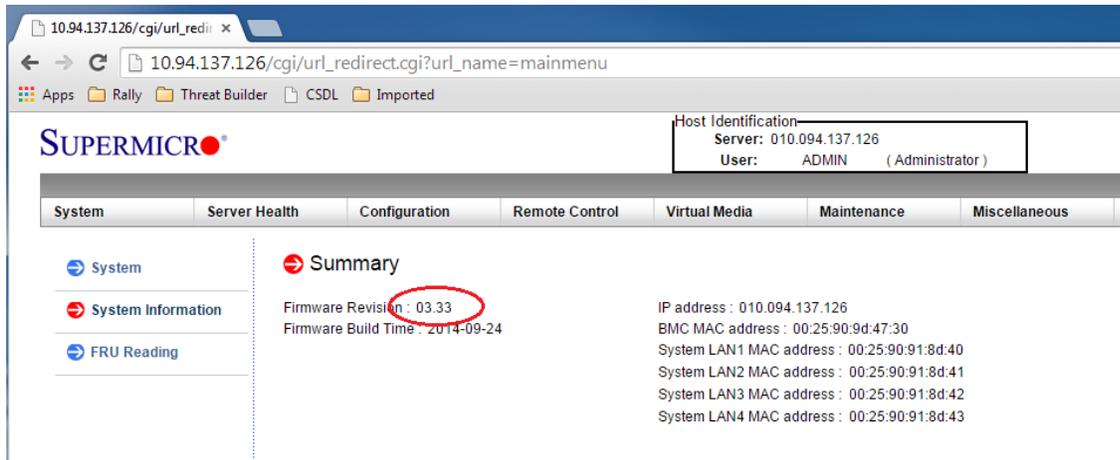
2.4 IPMI Firmware Validation

After the IPMI firmware upgrade has been completed and the system power-cycled, validation of a successful upgrade should be performed.

2.4.1 Validation using the IPMI port

Login to IPMI web GUI and the login page / System Information Page shows the IPMI firmware Revision.

The Firmware Revision should be “3.33” as shown in the image below:



2.4.2 Validation on CDS-TV

Verify the IPMI FW using the following command:

```
CDE460_system# cat /sys/devices/platform/ipmi_bmc.0702.32/firmware_revision
```

This should now return “3.33”

Execute the “`sdt`” CLI command. (example output is shown below):

```
[root@CDE460test ~]#sdt
*****
SuperDoctor II - Linux version 2.88(120726)
Copyright(c) 1993-2012 by Super Micro Computer, Inc. http://supermicro.com/
*****
Monitored Item           High Limit  Low Limit   Status
-----
Fan1 Fan Speed           300         4285
Fan2 Fan Speed           300         4753
Fan3 Fan Speed           300         4655
Fan5 Fan Speed           300         4623
CPU1 Vcore Voltage       1.49        0.53        0.82
CPU2 Vcore Voltage       1.49        0.53        0.98
VDIMM AB Voltage         1.65        1.20        1.34
VDIMM CD Voltage         1.65        1.20        1.34
VDIMM EF Voltage         1.65        1.20        1.34
VDIMM GH Voltage         1.65        1.20        1.34
VTT Voltage               1.34        0.91        1.06
+1.5V Voltage             1.65        1.34        1.47
```

+5V Voltage	5.50	4.48	4.99
+12V Voltage	13.24	10.80	11.97
+3.3V Voltage	3.65	2.93	3.31
+3.3VSB Voltage	3.65	2.93	3.36
VBAT Voltage	3.31	2.69	3.26
CPU1 Temperature	95/203		Low
CPU2 Temperature	95/203		Low
System Temperature	85/185		35/95
Peripheral Temperature	85/185		42/107
PCH Temperature	95/203		45/113
Chassis Intrusion			Good
Power Supply Status			Good

Note: if sdt returns the following error:

```
*****
```

```
SuperDoctor II - Linux version 2.88(120726)
```

```
Copyright(c) 1993-2012 by Super Micro Computer, Inc. http://supermicro.com/
```

```
*****
```

```
Error: no i2c device files found. Please use mkdev.sh to create them.
```

Run the following command: `/usr/sbin/enable_ipmi.sh`

Then run the “sdt” CLI command again.