

Field Engineer's FRM220 NMC-R3 Upgrade Procedure

The information within this document is intended for experienced service personnel with knowledge of TCP/IP networking, PC networking configuration, serial terminal configuration and operation.

Failure to follow steps precisely could leave the flash on the embedded device in an unusable state, requiring factory assistance.

Failure of boot code upgrade requires the factory to physically replace the flash chip, which is a surface mounted component, soldered with RoHS compliant materials (non-lead).

Please be warned and please be careful. **Stable AC power is a MUST!! during flash update**

Abstract:

No matter the upgrade method, performing **NMC upgrade will NOT affect any of the other chassis installed line cards or the transmissions from those cards as long as power is maintained to the chassis**. This procedure is specific for the field engineer. This procedure **does NOT require any connection to customer's network**. The upgrade of **NMC-R3** can be done with the engineer's laptop computer directly. **However, the upgrade must be done locally as console access is required.**

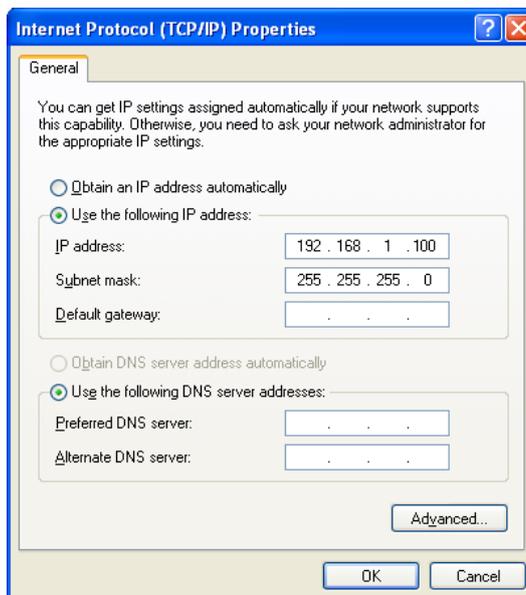
Prerequisites:

- FRM220 20U Chassis with NMC-R3, (This is third hardware release version of NMC / w 64MB DDR)
- DB9F to DB9M 1:1 cable (or **USB to RS232 cable for Laptop**, driver already installed)
- Laptop with TCP/IP ready
- Console emulation software (**PuTTY**, HyperTerminal or Tera Term)
- TFTP server (Free/Open Source Tftpd32 by Ph. Jounin, **included in upgrade package**)
- Upgrade firmware, for version 5.xx, released as 'romfs5xx.gz' files which are Unix GZIPped image files (DO NOT UNZIP these files.)

Procedure:

1. Advise customer that NMC will be taken offline (disconnected from customer's management network.)
2. Disconnect the RS-232 console port (if connected) and the LAN cable from the in-service NMC.
3. Connect the NMC-R3's DB9F serial port to the laptop's COM port with 1:1 configuration cable.
4. Connect the NMC-R3's RJ-45 Ethernet port to the Laptop's Ethernet LAN port. **Configure TCP/IP settings** on the laptop as follows:

- a. static IP 192.168.1.100
- b. subnet mask 255.255.255.0

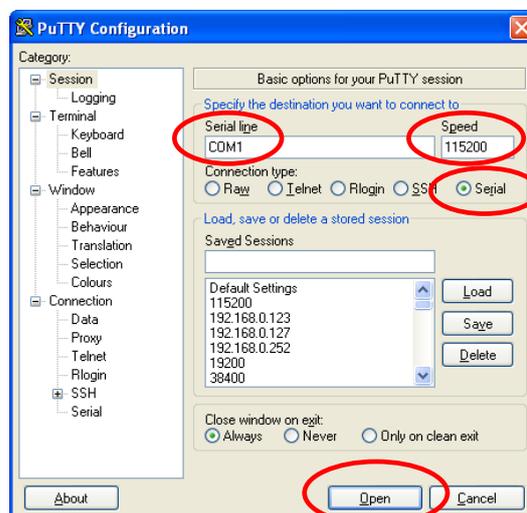


5. **Start the terminal application** and configure it for:

- a. 115.2k baud
- b. 8 pits
- c. no parity
- d. 1 stop bit
- e. no flow control

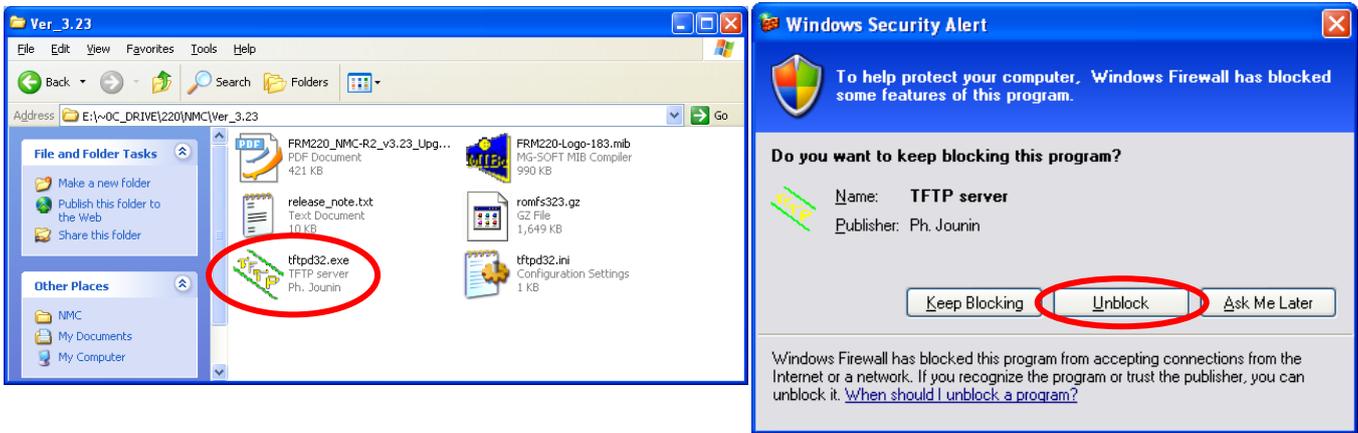
Hints for PuTTY

- a. Select 'Serial' radio button
- b. Key in the speed of 115200
- c. Key in the serial line COMx number
- d. Click 'Open' to start the terminal

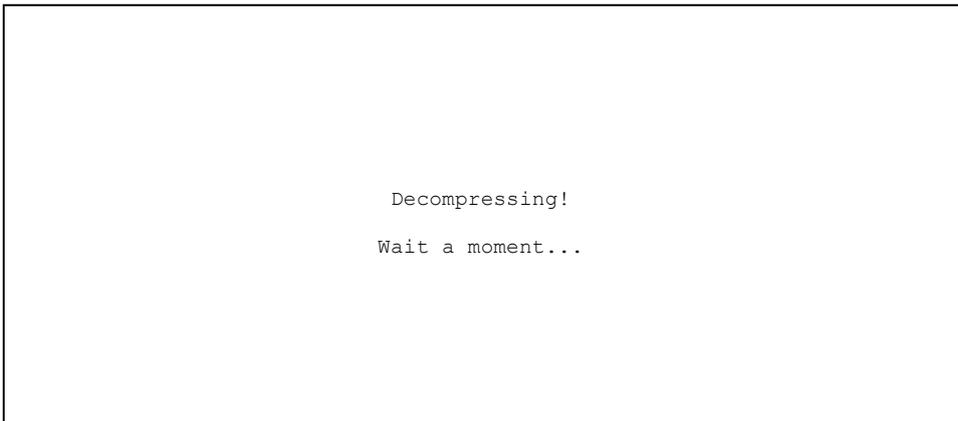


6. **Extract the upgrade package** on the laptop. The package will include the firmware, release notice, MIB file and the free, open source TFTP server for Windows.

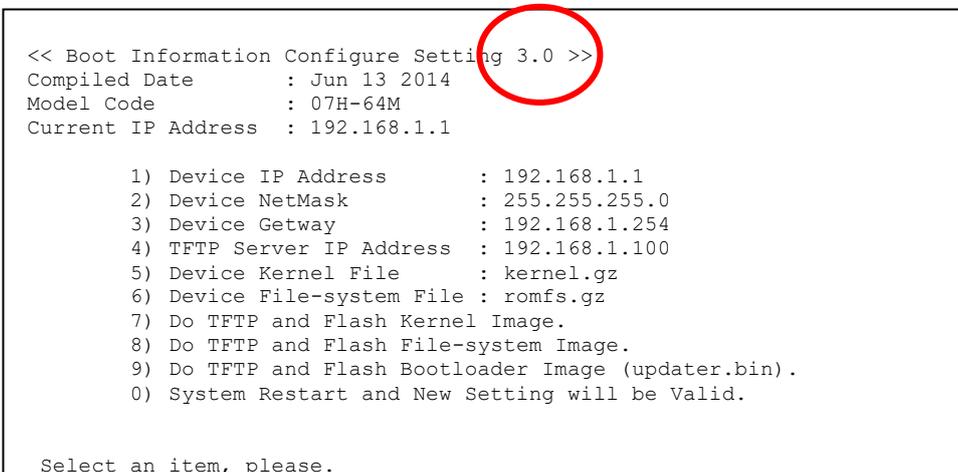
7. **Start the TFTP application** program by double-clicking it. If the firewall complains, select 'Unblock'. Make sure the 'gz' file is located in the same directory as the TFTP application program.



8. **Do not power off running chassis.** Hot plug the NMC (remove and re-insert), or reboot the NMC through the console menu. As soon as you see the below “Decompressing” screen, immediately **press the shift key and 7** ('&' on US keyboard) once. If you see the prompt 'CTCUBoot >>' then you pressed '&' twice. Enter the 'boot' command and try again. **Press '&' quickly, only once.** This will enter the “Boot Loader” menu.



9. If you do not see the following "Boot Information" screen, repeat step 8 again until you see this display. Check the 'Configure Setting' version. **If it is not 3.0, then this is not NMC-R3.** Abort this procedure!!



10. **Erase Flash:** Under normal upgrade, this should not be done or required. However, under special circumstances, erasing may be required (such as preparing an NMC for generic use). Erasing will create a completely contiguous memory space for kernel and filesystem. **It will also erase all parameter and Alias data.** Therefore, use wisely and with caution.

Usage: at bootloader screen key-in **clnb**.

11. **Kernel upgrade:** The below screen is an example of a version 3.0 boot code. To upgrade the kernel, check and make changes to each of the lines indicated with arrows. Upgrade kernel only if required, or if the flash has been erased. Skip to step 12 to upgrade filesystem.

```
<< Boot Information Configure Setting 3.0 >>
Compiled Date      : Jun 13 2014
Model Code        : 07H-64M
Target MAC Address : 00:02:AB:00:00:01

1) Target IP Address      : 192.168.1.1 ←
2) Target NetMask        : 255.255.255.0 ←
3) Target Getway         : 192.168.1.254 ←
4) TFTP Server IP Address: 192.168.1.100 ←
5) Target Kernel File    : linux.zip ←
6) Target Filesystem File: romfs.zip
7) Do TFTP and Flash Kernel Image.
8) Do TFTP and Flash FileSystem Image.
9) Do TFTP and Flash Bootloader Image (updater.bin).
0) System Restart and New Setting will be Valid.

Select an item, please.
```

- (1) Target IP Address: **192.168.1.1** <== **this must be same subnet as your laptop**
 - (2) Target NetMask: **255.255.255.0**
 - (3) Target Gateway: **192.168.1.254**
 - (5) TFTP Server IP Address: **192.168.1.100** <== **this will be your laptop's IP address**
 - (6) Target Kernel File: **kernel14622.gz** (or newer) <== **make sure name matches this upgrade version**
 - (7) Target Filesystem File: **romfs5xx.gz** (or newer)
 - (S) Press 'S' to restart system, press '&' to re-enter System Configure Setting
- (Always REBOOT after changing any system information!!)**
- Double check and correct any missing item.

```
<< Boot Information Configure Setting 3.0 >>
Compiled Date      : Jun 13 2014
Model Code        : 07H-64M
Target MAC Address : 00:02:AB:00:00:01

1) Target IP Address      : 192.168.1.1 ←
2) Target NetMask        : 255.255.255.0 ←
3) Target Getway         : 192.168.1.254 ←
4) TFTP Server IP Address: 192.168.1.100 ←
5) Target Kernel File    : kernel14622.gz ←
6) Target Filesystem File: romfs3xx.gz ←
7) Do TFTP and Flash Kernel Image. ←
8) Do TFTP and Flash FileSystem Image.
9) Do TFTP and Flash Bootloader Image (updater.bin).
0) System Restart and New Setting will be Valid.

Select an item, please.
```

Now, **press '8' "Do TFTP and Flash Kernel Image"** to start the Ethernet auto-negotiation and complete the kernel upgrade.

12. **Romfs upgrade:** The below screen is an example of a version 3.0 boot code. To upgrade the filesystem, check and make changes to each of the lines indicated with arrows.

```
<< Boot Information Configure Setting 3.0 >>
Compiled Date      : Jun 13 2014
Model Code        : 07H-64M
Target MAC Address : 00:02:AB:00:00:01

1) Target IP Address      : 192.168.1.1 ←
2) Target NetMask        : 255.255.255.0 ←
3) Target Getway         : 192.168.1.254 ←
4) TFTP Server IP Address: 192.168.1.100 ←
5) Target Kernel File    : linux.zip
6) Target Filesystem File: romfs.zip ←
7) Do TFTP and Flash Kernel Image.
8) Do TFTP and Flash FileSystem Image.
9) Do TFTP and Flash Bootloader Image (updater.bin).
0) System Restart and New Setting will be Valid.

Select an item, please.
```

- (1) Target IP Address: **192.168.1.1** <== **this must be same subnet as your laptop**
 - (2) Target NetMask: **255.255.255.0**
 - (3) Target Gateway: **192.168.1.254**
 - (5) TFTP Server IP Address: **192.168.1.100** <== **this will be your laptop's IP address**
 - (6) Target Kernel File: **kernel14622.gz** (or newer)
 - (7) Target Filesystem File: **romfs5xx.gz** (or newer) <== **make sure name matches this upgrade version**
 - (S) Press 'S' to restart system, press '&' to re-enter System Configure Setting
- (Always REBOOT after changing any system information!!)**
 Double check and correct any missing item.

```
<< Boot Information Configure Setting 3.0 >>
Compiled Date      : Jun 13 2014
Model Code        : 07H-64M
Target MAC Address : 00:02:AB:00:00:01

1) Target IP Address      : 192.168.1.1 ←
2) Target NetMask        : 255.255.255.0 ←
3) Target Getway         : 192.168.1.254 ←
4) TFTP Server IP Address: 192.168.1.2 ←
5) Target Kernel File    : kernel14622.gz ←
6) Target Filesystem File: romfs503.gz ←
7) Do TFTP and Flash Kernel Image.
8) Do TFTP and Flash FileSystem Image. ←
9) Do TFTP and Flash Bootloader Image (updater.bin).
0) System Restart and New Setting will be Valid.

Select an item, please.
```

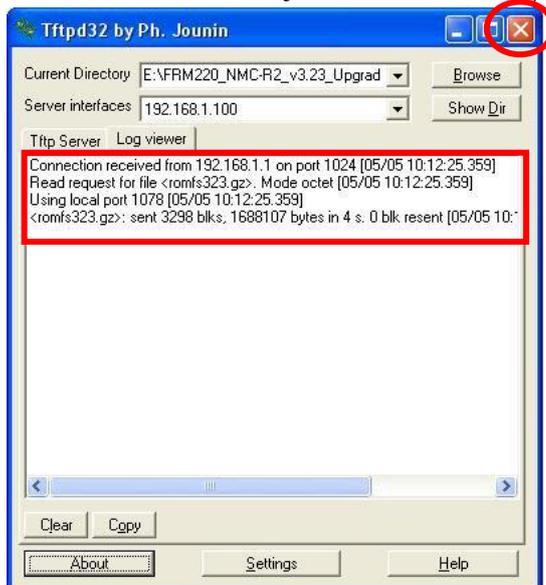
Now, **press '9' "Do TFTP and Flash Filesystem Image"** to start the Ethernet auto-negotiation and complete the romfs upgrade. You should see:

```
Wait for auto-negotiation complete...
OK
100MB - Full Duplex
Download OK, file size:458075
Image existed! Do you want to delete it?[y/n] ←
Flash programming .....
```

If you see Timeout message, check connections and settings and press '9' again. You may need to press a few times until the auto-negotiation has been successful. **Answer the prompt with "y"** to do the upgrade.

WARNING!!! Do not allow any power interruption until completed successfully!!!

13. Confirm TFTP transfer was OK by clicking the 'Log viewer' tab and then close the TFTP server application. (it should indicate the new version filesystem file was sent)



14. Reboot the NMC-R3 with new kernel/filesystem. Confirm the version is now 5.xx. (new version)

```

*****
*** CTC UNION TECHNOLOGIES CO., LTD. ***
*** FRM220 NMC VER. 5.xx ***
*****
This Chassis ID:[00] Cascaded:[Yes] Monitored Chassis ID:[00]
Chassis List:[Master]
#0:[X] #1:[ ] #2:[ ] #3:[ ] #4:[ ] #5:[ ] #6:[ ] #7:[ ] #8:[ ] #9:[ ]
<1>:SLOT #01 > NMC & Chassis <B>:SLOT #11 > Empty
<2>:SLOT #02 > Empty <C>:SLOT #12 > Empty
<3>:SLOT #03 > Empty <D>:SLOT #13 > Empty
<4>:SLOT #04 > Empty <E>:SLOT #14 > Empty
<5>:SLOT #05 > Empty <F>:SLOT #15 > Empty
<6>:SLOT #06 > Empty <G>:SLOT #16 > Empty
<7>:SLOT #07 > Empty <H>:SLOT #17 > Empty
<8>:SLOT #08 > Empty <I>:SLOT #18 > Empty
<9>:SLOT #09 > Empty <J>:SLOT #19 > Empty
<A>:SLOT #10 > Empty <K>:SLOT #20 > Empty
<->:Monitor Previous Chassis <+>:Monitor Next Chassis
<L>:SNMP System Configuration Setup
<M>:SNMP Manager Configuration Setup
<P>:Password Setup
<R>:Reboot <Z>:Logout
Please select an item.
    
```

15. Reconnect the customer's connections to the NMC card. The customer's original TCP/IP settings for the NMC should not have been changed when doing this 'Offline' upgrade.

This completes the successful upgrade of the **FRM220 NMC-R3**. View the 'release_notice.txt' file in this package for changes in this version.

<END>



Fiber Series

CTC Union Technologies Co., Ltd.

Far Eastern Vienna Technologies Center
(Neihu Technology Park)

8F, No. 60, Zhouzi St., Neihu, Taipei, Taiwan

Phone:(886) 2.2659.1021 Fax:(886) 2.2.799.1355

E-mail: techsupport@ctcu.com <http://www.ctcu.com>