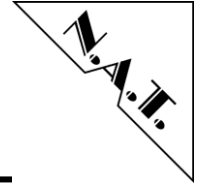


**NAT-MCH**

**Firmware Update Manual**

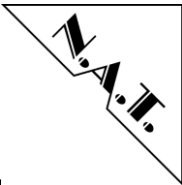
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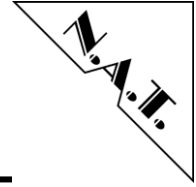
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## Introduction

This update procedure describes the of the NAT-MCH firmware.

This guide is valid for all existing hardware releases. Together with this update, a set of documents is provided by:

- MCH User's Manual
- Release Notes of MCH Firmware

Please read carefully this documentation, especially the chapter “Configuration” of the User's Manual for relevant changes that may affect the operation of the NAT-MCH in your environment.

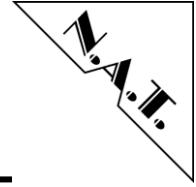
This guide is divided into several chapters, which describe the steps to be taken to upgrade the NAT-MCH. These steps may differ depending on the hardware release of your NAT-MCH. To perform the upgrade you might need the serial or USB console cable supplied with the NAT-MCH to be connected

## Upgrading the Base-Module Firmware

There are two options for updating the MCH firmware on the NAT-MCH. The preferred option is to update the NAT-MCH via the **“Update MCH” interface of the Web-Interface** if you are currently running a firmware version V2.7 or newer.

Please extract the file mch\_fw\_v2\_xx\_xx\_webupdate.tar from the package and upload this file on the “Firmware Update for NAT-MCH” page.

The screenshot displays the NAT-MCH web interface. The top header is light blue with the text "NAT-MCH by N.A.T." in black. On the left, a vertical sidebar contains a "Setup" menu with items like "Base Configuration", "JSM", "Switch" (set to "BASE 1GbE"), "Age Time", "Port on/off", "Port VLAN", "802.1Q VLAN", "802.1X", "802.1p", "Port Mirroring", "Jumbo Frame", "Link Aggregation", "Rapid Spanning Tree", "Serdes/SGMII", "Link Status", and "BCM5396 counters". Below this is a "Maintenance" menu with items like "Script Management", "Board Information", "System Information", "Reboot NAT-MCH", "Update MCH", "Change Password", "N.A.T. Webpage", and "Home". The main content area is titled "Firmware Update for NAT-MCH" and contains a section "Upload TAR archive for NAT-MCH:". It includes a "Select file:" label, a "Browse..." button, and the text "No file selected.". Below this are "Upload" and "Cancel" buttons. A "Notes:" section follows, stating: "Select only a .tar-file here, do not select a .zip or .bin file. After clicking Upload you can select the components to be updated."



After that, you will see the following webpage:

**Setup**

- Base Configuration
- JSM
- Switch: BASE 1GbE
- Age Time
- Port on/off
- Port VLAN
- 802.1Q VLAN
- 802.1X
- 802.1p
- Port Mirroring
- Jumbo Frame
- Link Aggregation
- Rapid Spanning Tree
- Serdes/SGMII
- Link Status
- BCM5396 counters

**Maintenance**

- Script Management
- Board Information
- Custom Information

### Firmware Update for NAT-MCH

Device	Current version	New version	Update device?
Base board			
MCH Firmware	2.19.1	2.19.2	<input checked="" type="checkbox"/>

**DO NOT POWER-OFF OR RESTART THE DEVICE DURING UPDATE.**  
When Update is complete, a power cycle has to be done.  
Are you sure, that you want to continue?

Please, check the update option and press button “Update”. When the update process is completed, power cycle the NAT-MCH. This can be done via the CLI command “shutdown system”.

The second option is to update the firmware via the **MCH serial or USB console**. Please extract the firmware file `mch_fw.bin` from the package and place it on a TFTP server from which it has been downloaded by the NAT-MCH.

To initiate the update, type at the console prompt:

```
nat>update_firmware
```

Then you have to enter the path of the firmware binary image in the form:

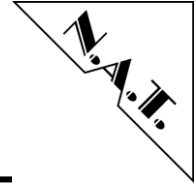
```
<IP_addr_of_tftp_server>:/path_to_file/filename
```

e.g.:

```
192.168.1.70:/tftp_path/mch_fw.bin
```

Please, enter the IP address in the “Dot” notation. Notice, that the IP address of the path must match configuration of the MCH, means the TFTP server has to be located in the same subnet as the MCH.

After a power cycle, the new firmware version should be loaded. This can be verified via the CLI command “version” or the menu item “Board Information” in the MCH web interface.



### Upgrading the Base-Module FPGA

In order to get all features of the latest MCH firmware available the FPGA of the MCH base board should be up to date. You find the latest base board FPGA version in the “bin” directory of the “MCH\_firmware\_2\_xx\_x.zip” file.

As with the MCH firmware the preferred way to update the base board FPGA is via **“Update MCH” interface of the Web-Interface** as it is described in the chapter before.

For a MTCA.4 MCH (double width) please use this .tar archive:

➔ MCH M4 Base FPGA\_V1\_xx.tar

For a MTCA.0 MCH (double width) please use this .tar archive:

➔ MCH Base FPGA\_V1\_xx.tar

The second option is to update the FPGA firmware is via the **MCH serial or USB console**. This update route should be used by advanced users.

Please extract the firmware file `mch_fpga_pcbx_x_v1_xx.rpd` from the package and place it on a TFTP server the MCH can access to.

To initiate the update, type at the console prompt:

```
nat>update_fpga
```

Then you have to enter the path of the firmware binary image in the form:

```
<IP_addr_of_tftp_server>:/path_to_file/filename
```

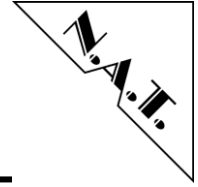
e.g.:

```
192.168.1.70:/tftp_path/mch_fpga_pcb2_2_v1_15.rpd
```

Please, enter the IP address in the “Dot” notation. Notice, that the IP address of the path must match configuration of the MCH, means the TFTP server has to be located in the same subnet as the MCH.

After a power cycle, the new firmware version should be loaded. This can be verified via the CLI command “version” or the menu item “Board Information” in the MCH web interface.

**PLEASE NOTE: There is no compatibility check during the FPGA update via the MCH console. If an incompatible FPGA firmware is flashed the MCH hardware will be damaged.**



## Upgrading the Hub-Module Firmware

### HUB-PCle Firmware Upgrading

The update package “PCle\_Hub\_2.x\_AVR\_FPGA\_webupdate.tar” includes the software components for the PCIe Hub-Module. It can be uploaded and updated like the MCH firmware. The update package will offer you the following options:

NAT-MCH by N.A.T.

**Setup**

**Base Configuration**

Switch BASE 1GbE

Age Time

Port on/off

Port VLAN

802.1Q VLAN

802.1X

802.1p

Port Mirroring

Jumbo Frame

Link Aggregation

Rapid Spanning Tree

Link Status

BCM5396 counters

Configure PCIe Virtual Switches

**Maintenance**

Script Management

Board Information

System Information

Reboot NAT-MCH

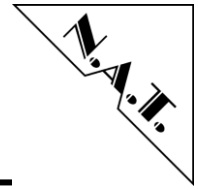
*Firmware Update for NAT-MCH*

Device	Current FW version	Update FW version	Update this device?
Base board			
Hub module			
PCle Atmel	V1.10	V1.10	<input checked="" type="checkbox"/>
PCle HUB Module FPGA	V1.5	V1.5	<input checked="" type="checkbox"/>

DO NOT POWER-OFF OR RESTART THE DEVICE DURING UPDATE.

When Update is complete, a power cycle has to be done.  
Are you sure, that you want to continue?

It is important to update the MCH firmware before the PCIe Hub-Module. Please do a power cycle between the updates.



## HUB-XAUI Firmware Upgrading

The update package “XAUI\_Hub\_AVR\_FPGA\_webupdate.tar” includes the software components for the XAUI hub module. It has be uploaded and updated like the MCH firmware via “Update MCH” menu. The update package will offer you the following options:

**Setup**  
Base Configuration  
JSM  
Switch **BASE 1GbE**  
Age Time  
Port on/off  
Port VLAN  
802.1Q VLAN  
802.1X  
802.1p  
Port Mirroring  
Jumbo Frame  
Link Aggregation  
Rapid Spanning Tree  
Serdes/SGMII  
Link Status  
BCM5396 counters  
  
**Maintenance**  
Script Management  
Board Information  
System Information  
Reboot NAT-MCH  
Update MCH  
Change Password

**Firmware Update for NAT-MCH**  

Device	Current version	New version	Update device?
<b>Hub module</b>			
XAUI Switch MC	1.9	2.0	<input type="checkbox"/>
XAUI Switch FPGA	1.7	1.8	<input type="checkbox"/>

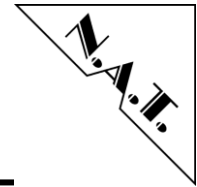
DO NOT POWER-OFF OR RESTART THE DEVICE DURING UPDATE.  
When Update is complete, a power cycle has to be done.  
Are you sure, that you want to continue?

With the checkboxes on the right you can choose the component to update. It is important to update the MCH firmware before the XAUI Hub-Module. Please do a power cycle between the updates.

After both updates is completed, you have to do a power cycle of the NAT-MCH.

For detailed instructions please refer to the User’s Manual chapter “Firmware Update from Web-Interface“.





## Multi-Module Update Packet

MCH Firmware version 2.20.2 adds the possibility to update different parts of the MCH in one go. These packages are available for XAUI-MCH, PCIe-MCH and SRIO-MCH.

NAT-MCH by N.A.T.

**Setup**

[Base Configuration](#)

[JSM](#)

Switch BASE 1GbE ▾

[Age Time](#)

[Port on/off](#)

[Port VLAN](#)

[802.1Q VLAN](#)

[802.1X](#)

[802.1p](#)

[Port Mirroring](#)

[Jumbo Frame](#)

[Link Aggregation](#)

[Rapid Spanning Tree](#)

[Serdes/SGMII](#)

[Link Status](#)

[BCM5396 counters](#)

Switch PCIe x48

[PCIe Virtual Switches](#)

[Error Counters](#)

[Link Status](#)

**Maintenance**

[Script Management](#)

[Board Information](#)

[System Information](#)

[Reboot NAT-MCH](#)

Firmware Update for NAT-MCH

Device	Current version	New version	Update device?
<b>Base board</b>			
MCH FPGA	1.15	1.15	<input type="checkbox"/>
<b>Clock module</b>			
Clock MC	1.3	1.3	<input type="checkbox"/>
Clock FPGA	1.4	1.4	<input type="checkbox"/>
<b>Hub module</b>			
PCIe Switch MC	1.11	1.11	<input type="checkbox"/>
PCIe Switch FPGA	1.5	1.5	<input type="checkbox"/>

DO NOT POWER-OFF OR RESTART THE DEVICE DURING UPDATE.

When Update is complete, a power cycle has to be done.

Are you sure, that you want to continue?

Update
Cancel

If the microcontroller firmware or the FPGA image on the hardware is older than the one in the package, the MCH will automatically select the check box for the particular device. To update the selected devices press the “Update” button.

The update may take several minutes. You may control the update process by watching the output on the Command Line Interface of the MCH.

After the successful update, a power cycle is needed.

**PLEASE NOTE:** It is recommended to update only parts of the MCH which are outdated, not all parts.