



Dolphin MXH95x NTB Adapter Firmware Release Note

November 30th, 2022

Version 1.7

Table of Contents

1	Introduction	3
1.1	Supported configurations	3
1.2	BMC Firmware versions	3
1.3	PFX FLASH Versions	3
1.4	Known issues and planned improvements	4
2	Appendix	5
2.1	How to check Firmware and EEPROM version	5
2.1.1	Linux platforms	5
2.1.2	Windows platforms.....	5
2.1.3	Example output:	5
2.2	How to upgrade the firmware.....	5
2.2.1	Linux platforms	5
2.2.2	Windows platforms.....	5
2.3	How to contact Dolphin Support	6

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1 Introduction

This release note covers the MXH95x PCIe NTB Adapter card firmware. The firmware consists of PFX configuration data and Management processor (BMC) firmware. This release note contains a summary of the changes made. Please contact Dolphin for details.

1.1 Supported configurations

The latest released firmware supports the following NTB configurations:

- Dual host x16
- Tree hosts x8
- Five hosts x4

Please find additional information on supported topologies and functionalities in the eXpressWare release notes. Please note eXpressWare 5.18.2 or newer is required for this card.

1.2 BMC Firmware versions

The Firmware version is covering the MXH95x BMC firmware changes.

Firmware version	Release date	Note
1.0	September 24 th 2020	Initial firmware release. Support for single x16 link.
1.2	December 3 rd , 2020	<ul style="list-style-type: none">• Adds Board Firmware Recovery support.
1.4	February 25 th 2021	<ul style="list-style-type: none">• Adds firmware version reporting.• Adds FireFly temperature and voltage readouts.
1.5	March 9 th , 2021	<ul style="list-style-type: none">• Companion release with MXH94x Transparent cards. Bundled with eXpressWare 5.18
2.0	June 24 th 2021	<ul style="list-style-type: none">• Added longer delay before releasing PFX from reset after power on in order to allow clocks to stabilize.• Fixed link status issues with MR2 PFX firmware.
2.1	October 29 th 2021	<ul style="list-style-type: none">• Added support for MXH95x C revision cards.• Added support for overtemperature shutdown and DIP-switch to disable. Bundled with eXpressWare 5.19.2
2.4	December 16 th 2021	<ul style="list-style-type: none">• No changes for MXH95x NTB cards
2.5	February 3 rd 2022	<ul style="list-style-type: none">• Fixes potential BMC code crash/auto restart issue. No customer impacts.
2.6	February 24 th 2022	<ul style="list-style-type: none">• Disables green blinking of Link status LED for Gen3 Link speed (MXH95x only).
2.7	April 24 th 2022	<ul style="list-style-type: none">• Added support for extended serial number format
2.8	May 16 th 2022	<ul style="list-style-type: none">• Add support for FireFly G3 firmware 16.16 Bundled with eXpressWare 5.20.0
2.9	October 7 th 2022	<ul style="list-style-type: none">• Added support for MXH94x/95x Rev CD with PM40052 chip Bundled with eXpressWare 5.20.2 and newer

1.3 PFX FLASH Versions

The PFX FLASH version changelog. Please note that the Dolphin software tools report the PFX FLASH version as the EEPROM version.

PFX Multiconfig version	Release date	Note
1	October 13 th , 2020	<ul style="list-style-type: none">• Initial release. Based on Microchip firmware pm74605_pfx_03600049.
2	December 10 th , 2020	<ul style="list-style-type: none">• Added DMA support• Set management endpoint BAR to 4MB

		<ul style="list-style-type: none"> Fixed firmware upgrade problem
3	February 16 th 2021	<ul style="list-style-type: none"> Applied Microchip firmware MR2, 3.70.0.4f. Bundled with eXpressWare 5.18
4	July 6 th 2021	<ul style="list-style-type: none"> ChipLink version 1.62.00 Fixed PCI-SIG compliance test issues. STATUS PASS Enabled CTS on UPS Enabled AER reporting on CTS Set Link Capability (LnkCap) 0x70 for USP (vEP) Enabled Reset Partition on USP link down Increased TLP throttling from 50.000 to 70.000 (Microchip recommendation) Number of MC Overlays changed from 1 to 16 (USP) in NTB mode Added support for dual x8 and quad x4 NTB configurations. Bundled with eXpressWare 5.19.2
5	February 24 th 2022	Applied Microchip MR4 3.90.0.5b <ul style="list-style-type: none"> File format 3.90.0.5b ChipLink version 1.68.00 Fixes MR2 related problem with Optical support that could cause link to train to lower speed or narrower links. MR4 fixes two Node DMA issue. Note: MR4 requires eXpressWare 5.20.0 or newer.
6	May 16 th 2022	No changes for MXH95x NTB cards, companion release. Bundled with eXpressWare 5.20.0 and newer

1.4 Known issues and planned improvements

- PFX Synthetic Endpoint not supported. Contact Dolphin for information.

2 Appendix

2.1 How to check Firmware and EEPROM version

The version of the firmware components can be retrieved using the **dis_diag** tool. This information is available by installing eXpressWare 5.18 or newer. Please see options using **-h** option. This software is available for both Windows and Linux.

2.1.1 Linux platforms

```
# cd /opt/DIS/sbin
# ./dis_diag
```

2.1.2 Windows platforms

```
> cd %ProgramFiles%\Dolphin Express MX\Util
> .\dis_diag
```

2.1.3 Example output:

```
# dis_diag
=====
Dolphin diagnostic tool -- dis_diag version 5.18.0 (Mon Oct 12 16:44:17 CET 2020)
=====

dis_diag compiled in 64 bit mode
Driver : Dolphin IRM (GX) 5.18.0 Oct 24th 2020 (rev 33fff3a)
Date   : Mon Oct 12 12:59:28 CET 2020
System : Linux somenode 3.10.0-514.21.1.el7.x86_64 #1 SMP Thu Oct 12 17:04:51 UTC 2020
x86_64 x86_64 x86_64 GNU/Linux

Number of configured local adapters found: 1

Adapter 0 > Type           : MXH950
           Mode           : NTB
           NodeId         : 4
           Serial number  : MXH950-CC-000015
           MXH chip family : MICROSEMI - PFX GEN4
           MXH chip vendorId : 0x11f8
           MXH chip device  : 0x4036
           MXH chip revision : 0x0 (ZB)
           EEPROM version   : 3
           EEPROM vendor info : 0x0000
           Firmware version : 1.5
           Card revision    : CC
```

2.2 How to upgrade the firmware

The firmware can be upgraded using the **upgrade_eeprom** utility bundled with eXpressWare.

2.2.1 Linux platforms

```
# cd /opt/DIS/sbin
# ./upgrade_eeprom.sh --upgrade
```

2.2.2 Windows platforms

Start PowerShell with administrative capabilities (Press Windows+X, select Windows PowerShell (Admin))

```
PS > cd "${env:ProgramFiles}\Dolphin Express MX\Util"
PS > Set-ExecutionPolicy AllSigned -Scope Process
PS > .\upgrade_eeprom.ps1 --upgrade
```

Please carefully review the output from the upgrade utility.

A complete power cycle of the system (including removal of AuxPower) is required after the firmware upgrade.

Please verify the firmware upgrade was successful after system is powered on again following the steps found in section 2.1 How to check Firmware and EEPROM version above.

2.3 How to contact Dolphin Support

Please contact Dolphin support at pci-support@dolphinics.com if you have any questions or issue.