Dolphin MXP924 PXIe System Switch Firmware Release Note

11th February 2025

Version 4.0

Table of Contents

1 Introduction

This release note covers the MXP924 PXIe System Switch firmware. The firmware consists of Microchip PFX runtime executables and configuration data and Board Management Controller firmware (BMC config). This note contains a summary of the changes made. Please contact Dolphin for details.

1.1 Supported topologies

The latest released firmware supports the following transparent configurations

Cable Configuration:

- Single x4 / x8 / x16 Upstream
- Single x4 / x8 Upstream, Single x4 / x8 Downstream

Backplane Configuration:

PCIe Gen3 x16 + x8
PCIe Gen3 x4+x4+x4+x4

1.2 BMC Firmware versions

The Firmware version covers the MXP924 BMC firmware changelog.

Firmware version	Release date	Note
1	September 24th, 2020	Initial firmware release.
1.4	February 25th, 2021	• Adds Board Firmware Recovery support. • Adds firmware version reporting. • Add support for AOC temperature reporting.
1.5	March 9th, 2021	• BMC stability improvements
2.0	June 24th, 2021	• Added support for PCI-SIG CMI sideband support, including reset and wake Signals. • Added longer delay before releasing PFX from reset after power on to allow clocks to stabilize. • Fixed link status issues with MR2 PFX firmware. • Added MXP924-BB base board
2.1	October 2021	• Added safety mechanism to trigger board shutdown on overtemperature. • New and improved Gen3 LED blinking pattern. • Added support for MXP924-CC
2.4	December 16th, 2021	• Added support for DIP-switch to enable WAKE and PowerON. Off by default • Bundled with eXpressWare 5.19.2
2.5		• No relevant changes
2.6		• No relevant changes
2.7	April 26th, 2022	• Added support for extended multi config • Minor bugfixes and improvements
2.8	May 16th, 2022	• Adjusted threshold values for active optical cables
2.9		• No relevant changes
2.10	January 26th, 2024	Changes: • Added new DIP-Switch settings to support 4x4 configurations on the backplane. Please consult the MXP924 Users Guide for details.
3.1	June 5th, 2024	Changes: • Added support for 4x4 configurations on the backplane.
3.2	August 27th, 2024	Changes: • Added internal WAKE generation for PXIe products to support PXIe Chassis not providing WAKE through the backplane. Bundled with eXpressWare 5.23.0

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.

FLASH version	Release date	Note
1	January 24th, 2021	Initial firmware version.
2	March 15th, 2021	Applied Microchip MR2, 3.70.0.4f Changes: • Disabled prefetch for management BAR0 • Updated patch tables
3	May 18th, 2021	• Updated port assignment.
4	May 20th, 2021	• Updated patch tables.
5	August 16th, 2021	• Multiconfig cleanup.

6	October 6th, 2021	Changes:
		• Added config #1 to multi-config:
		  • Port 1-2: x8 UPS on the cable port
		  • Port 3-4: x8 DSP on the cable port
		Bundled with eXpressWare 5.19.2

7	April 26th , 2022	ChipLink version 1.68.00 Changes: • Fixed link capabilities in patch table entries for downstream ports Bundled with eXpressWare 5.21.x

8	January 22nd, 2024	Applied Microchip MR5, Patch 3
		• ChipLink version: 01.80.05
		• ChipLink file format: 0390006C
		Changes:
		• No Link Down for EP speed change: checked
		• Throttling adjustments
		Max TLP to FW Per Second: 70.000 TLP/s
		Max TLP to NT Doorbells Per Seconds: 200.000 TLP/s
		TLP Throttling Window: 80
		• Added 4x4 in config #3:
		  o P08: USP, cable port, x16
		  o P28: Backbone, x4
		  o P30: Backbone, x4
		  o P32: Backbone, x4
		  o P34: Backbone, x4
		• Added 4x4 in config #4:
		  o P08: USP, cable port, x8
		  o P12: DSP, cable port, x8
		  o P28: Backbone, x4
		  o P30: Backbone, x4
		  o P32: Backbone, x4
		  o P34: Backbone, x4
		   - Multiconfig map:
		    -- 0 TARGET_1x16, Backbone: x16, x8
		    -- 1 TARGET_1x8, DSP Cable: x8, Backbone: x16, x8
		    -- 2 TARGET_1x16, Backbone: 4x4
		    -- 3 TARGET_1x8, DSP Cable: x8 Backbone: 4x4
		
		Bundled with eXpressWare 5.22.0

9	January 25th, 2025	Applied Microchip MR6 • ChipLink version: 01.86.01 • ChipLink file format: 03900070 Changes: • Added 3 new DIP switch configurations were the "Hot Plug Capability" is disabled. Please consult the updated MXP924 Users Guide for details. Bundled with eXpressWare 5.23.0

2 Appendix

2.1 How to determine the Firmware versions

The version of the firmware components can be retrieved using the **dis_diag** tool. Please see options using –h option. This tool is available by installing eXpressWare Board Management Software 5.19.2 or newer. The software is available for both Windows and Linux and can be downloaded from www.dolphinics.com/mx.

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 5.19.0 (Mon Oct 12 16:44:17 CET 2021)
================================================================================

Adapter 1 > Type                : MXP924
            Mode                : TRANSPARENT
            NodeId              : 4
            Serial number       : MXP924-CC-000048
            MXH chip family     : MICROSEMI - PFX GEN4
            MXH chip vendorId   : 0x11f8
            MXH chip device     : 0x4052
            MXH chip revision   : ZB
            EEPROM version      : 09
            EEPROM vendor info  : 0x0000
            Firmware version    : 3.2
            Card revision       : CC
            Topology type       : Not determined
            Topology Autodetect : No
            Number of enabled links : 2
            Max payload size (MPS) : 128
            Multicast group size : 2 MB
            Multicast groups    : 4
            Clock mode slot     : Port
            Clock mode link     : Global
            BDF                 : 03:00.0
            PCIe slot hwport    : P 8
            PCIe slot state     : x4, Gen4 (16 GT/s)
            PCIe slot capabilities : x4, Gen3 (8 GT/s)
```

2.2 How to upgrade the firmware

The firmware can be upgraded using the upgrade_eeprom utility bundled with eXpressWare version 5.18 or newer.

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

2.3 How to contact Dolphin Support

For general support questions, please contact Dolphin via the Jira Service Management portal: www.dolphinics.com/csp.