



Dolphin Interconnect Solutions

MXS824 management version 1.5.2

Release note

15th September 2021

Table of Contents

Table of Contents.....	2
DISCLAIMER.....	3
Introduction.....	3
Passwords.....	3
Revision History.....	4
Hardware.....	4
Management software versions.....	4
MXS824 Management release 1.5.2 content:.....	5
Supported configurations.....	6
NTB configurations PXH820, PXH830.....	7
Transparent configurations PXH822, PXH832.....	7
NTB configurations MXH830.....	7
Transparent configurations MXH832, MXH833.....	7
Dolphin eXpressWare.....	7
Dolphin technical support.....	7
Upgrade instructions with Internet access.....	8
Online upgrade requirements.....	8
Upgrading from Management version 1.0.0 or 1.1.0.....	8
Upgrading from Management version 1.5.0 and older.....	8
Applying the Network Update patch.....	8
MXS824 Online upgrade.....	10
Upgrade instructions without Internet access.....	12
Upgrade through factory reset.....	14
PFX PCIe configuration upgrade instructions.....	15

DISCLAIMER

DOLPHIN INTERCONNECT SOLUTIONS RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY OF ITS PRODUCTS TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. DOLPHIN INTERCONNECT SOLUTIONS DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT.

LIFE SUPPORT POLICY

DOLPHIN INTERCONNECT SOLUTIONS' PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES.

Introduction

This document describes the process of upgrading the MXS824 Management system. Additional information can be found in the MXS824 Users Guide available at www.dolphinics.com/products/MXS824.html.

Passwords

Some links in this document will bring you to Dolphins web download section. Please use the username and password you normally use to download Dolphins eXpressWare software. If you don't know the username and password, please register at www.dolphinics.com/mx or www.dolphinics.com/px depending on the type of PCIe card you are using with the MXS824 switch.

Revision History

The MXS824 hardware and firmware revision history.

Hardware

Revision	Note
BC	First shipping version
CD	Minor change in internal production procedure
CE	Minor manufacturing changes

Management software versions

Management version	Note
1.0.0	First shipping version. Release date 30th August 2018.
1.1.0	New GUI, enforced HTTPS, authentication, network upgrade, bugfixes, updated PFX configs to VER5. Release date 2nd November 2018.
1.2.0	Network configuration, improved session management, real-time port monitoring, bugfixes, system updates, updated PFX configs to VER6 with cascable topology. Release date 1st April 2019.
1.3.0	Kernel update with fix for Ethernet link going down with some managed Ethernet switches. Release channel selection in Web GUI. Self-extracting and self-installing SD cards.
1.4.0	Updated PFX configs to VER8 with improved fiber support and retraining timeout. Minor improvements in Web GUI. Release date 8 th November 2019.
1.4.1	Bugfixes for 1.4.0. Release date 12 th November 2019.
1.4.2	1.4.1 minor bugfix for manufacturing issue. Not related to operation.
1.5.0	Updated MCU firmware to 8.12 for improved PCIe CMI support. Notify user if new PFX config is available. WARNING: Update may interrupt PCIe traffic. Release date 17 th September 2020.
1.5.1	Updated expired APT key Release date 13 th October 2020.
1.5.2	Fixed issue related to AOC support on port 4 and 24. Improved LED status after power on. Added support for 16 multicast groups in D-Switch mode. Fixed temporary CMI issue after firmware upgrade. Release date 5 th July 2021

MXS824 Management release 1.5.2 content

Component	Version
Management version	1.5.2
OS	Ubuntu 18.04.5 LTS
Kernel	4.19.68-19.09-2
PFX firmware	9.0
System Config	1.5.0
GUI Static Web	1.5.0
Node App	1.5.2
MCU firmware (STMs)	8.13
Devel	1.1.0

Supported configurations

The MXS824 is a general building block to create various types of PCI Express networks. The switch ships with firmware supporting some basic configurations:

Mode	Configuration Name	Configuration support	Minimum Required software
NTB Single	6 port x16	6 x16 NTB ports	eXpressWare 5.7.0
NTB Single	12 port x8	12 x8 NTB ports	eXpressWare 5.7.0
NTB Single	24 port x4	24 x8 NTB ports	eXpressWare 5.7.0
NTB Dual	SW 1 Dual 10 ports x16	Switch 1 in Dual switch NTB setup with 10 ports of x16 link width. Backbone on ports 1-4.	eXpressWare 5.11.1
NTB Dual	SW 2 Dual 10 ports x16	Switch 2 in Dual switch NTB setup with 10 ports of x16 link width. Backbone on ports 1-4.	eXpressWare 5.11.1
NTB Dual	SW 1 Dual 20 ports x8	Switch 1 in Dual switch NTB setup with 20 ports of x8 link width. Backbone on ports 1-4.	eXpressWare 5.11.1
NTB Dual	SW 2 Dual 20 ports x8	Switch 2 in Dual switch NTB setup with 20 ports of x8 link width. Backbone on ports 1-4.	eXpressWare 5.11.1
NTB Cascade	TOP 30 ports x16	NTB cascadable switch topology up to 30 ports by x16 link width. Top switch.	eXpressWare 5.11.1
NTB Cascade	SUB 1 30 ports x16	NTB cascadable switch topology up to 30 ports by x16 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	SUB 2 30 ports x16	NTB cascadable switch topology up to 30 ports by x16 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	SUB 3 30 ports x16	NTB cascadable switch topology up to 30 ports by x16 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	SUB 4 30 ports x16	NTB cascadable switch topology up to 30 ports by x16 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	SUB 5 30 ports x16	NTB cascadable switch topology up to 30 ports by x16 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	SUB 6 30 ports x16	NTB cascadable switch topology up to 30 ports by x16 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	TOP 60 ports x8	NTB cascadable switch topology up to 60 ports by x8 link width. Top switch.	eXpressWare 5.11.1
NTB Cascade	SUB 1 60 ports x8	NTB cascadable switch topology up to 60 ports by x8 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	SUB 2 60 ports x8	NTB cascadable switch topology up to 60 ports by x8 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	SUB 3 60 ports x8	NTB cascadable switch topology	eXpressWare 5.11.1

Mode	Configuration Name	Configuration support	Minimum Required software
		up to 60 ports by x8 link width. Uplink on chassis ports 1-4 (x16).	
NTB Cascade	SUB 4 60 ports x8	NTB cascadable switch topology up to 60 ports by x8 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	SUB 5 60 ports x8	NTB cascadable switch topology up to 60 ports by x8 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
NTB Cascade	SUB 6 60 ports x8	NTB cascadable switch topology up to 60 ports by x8 link width. Uplink on chassis ports 1-4 (x16)	eXpressWare 5.11.1
Transparent	6 port x16	One x16 upstream, 5 x16 downstream	No software required
Transparent	12 port x8	One x16 upstream, 10 x8 downstream	No software required
Transparent	24 port x4	One x16 upstream, 20 x4 downstream	No software required

Dolphin eXpressWare version 5.15.2 or higher is generally recommended to operate the switch in NTB mode. **Please note that eXpressWare 5.14.0 and higher requires Management Firmware version 1.4.2 or newer. Newer versions of eXpressWare may have additional requirements, please run the eXpressWare utility `dis_diag` for verification.**

Please consult the software release note for the appropriate adapter card for supported multi switch configurations and details.

NTB configurations PXH820, PXH830

If you are using the MXS824 with PXH820 or PXH830 cards, please download the *appropriate Switch, adapter, and Software Users Guides* from www.dolphinics.com/px

Transparent configurations PXH822, PXH832

If you are using the MXS824 with the PXH822 or PXH832 card, Please download the *appropriate Switch and adapter Users Guides* from www.dolphinics.com/px

NTB configurations MXH830

If you are using the MXS824 with MXH830 cards, please download the *MXS824, MXH830 and Software Users Guides* from www.dolphinics.com/mx

Transparent configurations MXH832, MXH833

If you are using the MXS824 with the MXH832 or MXH833 card, Please download the *appropriate Switch and adapter Users Guides* from www.dolphinics.com/mx

Dolphin eXpressWare

For more information on NTB clustering and Dolphins eXpressWare software, please visit www.dolphinics.com/software

Dolphin technical support

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

Upgrade instructions with Internet access

These instructions covers the network updates feature of the MXS824 switch available under the System page of the management web interface.

Online upgrade requirements

The online upgrades described in this document require that the MXS824 switch has access to Internet and can reach our online repository located at: <http://mxs824apt.dolphinics.com>

Our repository is hosted on Amazon Web Services (AWS), hence adding the repository to a firewall such as *iptables* may not be trivial. Amazon has a list of all IPs they use for *CloudFront* here: <https://docs.aws.amazon.com/AmazonCloudFront/latest/DeveloperGuide/LocationsOfEdgeServers.html> – you may need to grant access to all of them or at least the ranges used in your region. Upgrades are fetched through regular HTTP.

Online upgrade is recommended. Offline, more manual, alternatives are available if you are unable to meet the requirements for online upgrade.

For safety and compliance, the system upgrade routine described in the previous section does not automatically upgrade your active PFX PCIe configuration to the latest version! After upgrading the MXS824 switch, please follow the instructions given in chapter PFX PCIe configuration upgrade instructions on page 15.

Upgrading from Management version 1.0.0 or 1.1.0

If the switch is currently running Management version 1.0.0 or 1.1.0, you need to use the Upgrade through factory reset method described on page 14.

Upgrading from Management version 1.5.0 and older

Due to an issue with the network update on 1.5.0 and older, the Network Update patch needs to be applied to the MXS824 switch before it can perform the online update.

Applying the Network Update patch

This patch is only needed if you are upgrading from Management version 1.5.0 or older. Please proceed with the instructions given in MXS824 Online upgrade on page 10 if you are running version 1.5.1 or newer.

1. On an internet connected computer download the fix-update.zip:
<https://dl.dolphinics.com/mxs/zip/fix-update.zip>

The download may be verified by checking the sha256sum:
926a2cf63f72e0583a7baf4098fd1c5ac03031ac99e572ce4177381a7dee4ccd

Note: do not extract the zip file.

3. Log in to the management web interface of the MXS824 switch to be upgraded and navigate to the “System” page.

4. Under “Manual update” click the [Browse...] button and locate the zip file downloaded in step 1.



System Settings

Update Firmware

Perform a firmware update of the management processor. This may update the management kernel, management backend, management GUI, system configuration, available PFX configurations and hardware firmware if updates are available. If the update includes new PFX configuration(s), the configuration will not be activated automatically. You need to select and change to the new configuration under the PCIe tab after the update has completed.

Current firmware version: 1.4.2

Network update

This will look for updates and allow you to upgrade the management processor if updates are available. Requires Internet access for the switch.

Check for updates

Manual update

File

Browse...

Start update

Hostname

Change the device hostname. Current hostname is MXS824

New hostname

Apply

Admin Password

Change admin password for accessing the web interface. Please ensure you remember the new password. You currently need to contact Dolphin to reset the password.

Current password

New password

Confirm password

Apply

5. Click the [Start update] button and wait while zip file is uploaded.
6. When the fix has been applied, click [OK] to close the dialog.

Success

Operation completed successfully

You can now perform a normal network update.
Please press the "Check for updates" button

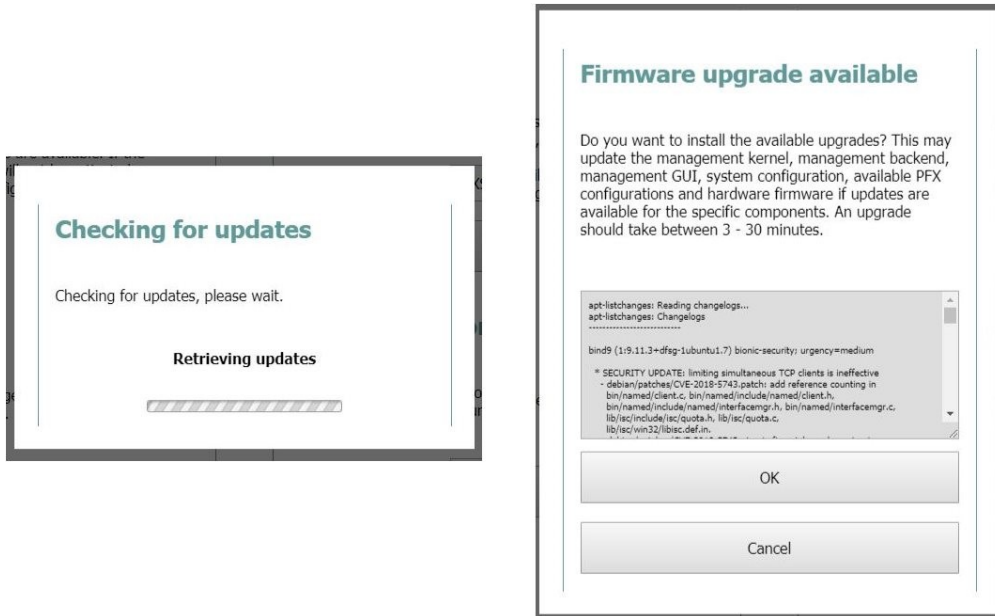
OK

You may now proceed with the normal network upgrade procedure below.

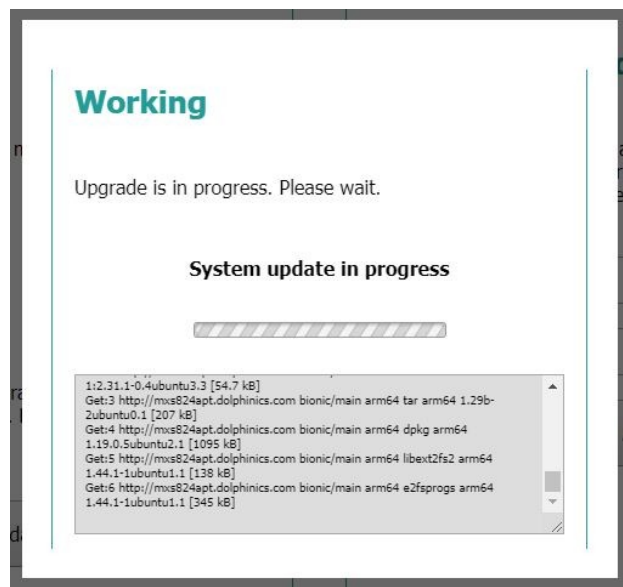
MXS824 Online upgrade

If you are updating from version 1.5.2 or already have applied the 1.5.0 Network Update patch, please proceed with the following steps to upgrade the MXS824 switch:

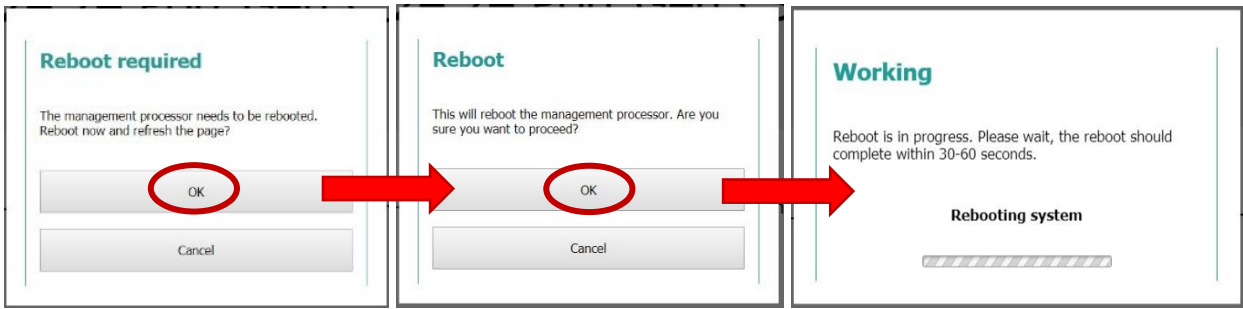
1. Initiate the upgrade by pressing the [Start Update] button under the System page:
2. The system will start looking for updates. This may take a couple of minutes depending on your network. A warning dialog will appear with details on available updates and ask you to confirm the upgrade operation. Click [OK] to proceed. **Warning: PCIe traffic may be interrupted after clicking [OK].**



3. The update is now in progress and the status field should update occasionally. The update time depends primarily on your network connection, but a typical upgrade will take 15 to 45 minutes.

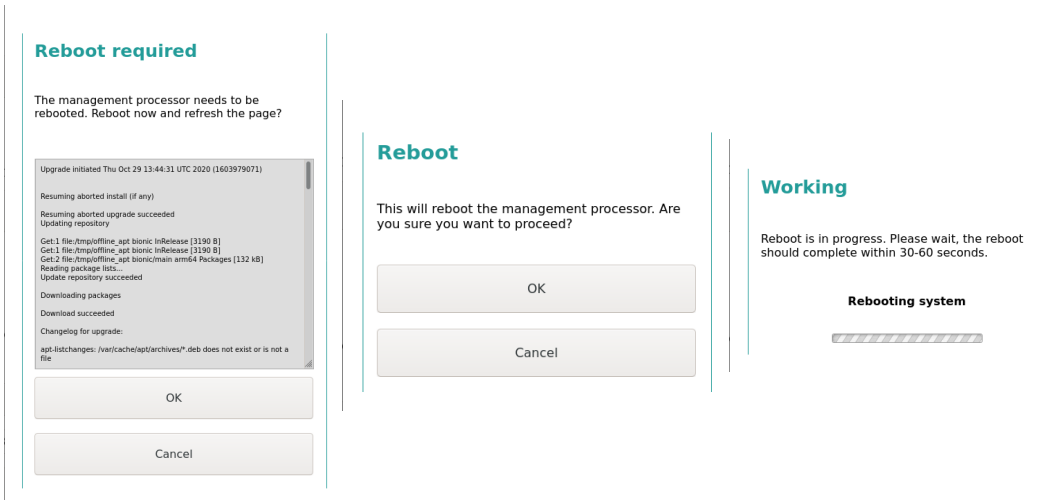


4. Once complete, you should be prompted that a reboot is required, confirm twice and wait for the reboot to complete. A manual reboot can be performed from the "System" page if you are not prompted.



5. The page should automatically refresh once done. You can confirm you have the latest version under “Firmware” at the “Status” page. The versions listed should match the table in section [“MXS824 Management release 1.5.2”](#)

6. When the upgrade is complete you may be prompted to reboot the MXS824 switch.



Please note that the system upgrade routine does not automatically upgrade your active PFX configuration to the latest version! Refer to section [“PFX PCIe configuration upgrade instructions”](#) on page 15.

Upgrade instructions without Internet access

These instructions covers updating the management software without direct internet access from the MXS824 switch. The upgrade is performed using the System page of the management web interface. If the switch is currently running version 1.0.0 or 1.1.0 please contact Dolphin via pci-support@dolphinics.com for instructions.

1. On an internet connected computer download the 1.5.2 update zip:

https://dl.dolphinics.com/mxs/zip/mxs_upgrade-mxs824-1.5.2.zip

The download may be verified by checking the sha256 sum:

8aadb7254bb5994065381a73acab236c1bdcd1e56e96d55e4dece68b86757623

Note: do not extract the zip file.

2. Copy the file to a computer on the internal network that can be reached by the MXS824 switch.

3. Log in to the management web interface of the MXS824 switch to be upgraded and navigate to the “System” page.

4. Under “Manual update” press the “Browse...” button and locate the zip file downloaded in step 1.

The screenshot shows the management web interface for an MXS824 switch. The top navigation bar includes a logo, the device name 'MXS824', and tabs for 'Status', 'PCle', and 'System'. A warning icon and a 'LOG OUT' button are also present. The main content area is titled 'System Settings' and is split into two panels.

Update Firmware

Perform a firmware update of the management processor. This may update the management kernel, management backend, management GUI, system configuration, available PFX configurations and hardware firmware if updates are available. If the update includes new PFX configuration(s), the configuration will not be activated automatically. You need to select and change to the new configuration under the PCle tab after the update has completed.

Current firmware version: 1.4.2

Network update

This will look for updates and allow you to upgrade the management processor if updates are available. Requires Internet access for the switch.

Check for updates

Manual update

File

Start update

Hostname

Change the device hostname. Current hostname is MXS824

New hostname

Apply

Admin Password

Change admin password for accessing the web interface. Please ensure you remember the new password. You currently need to contact Dolphin to reset the password.

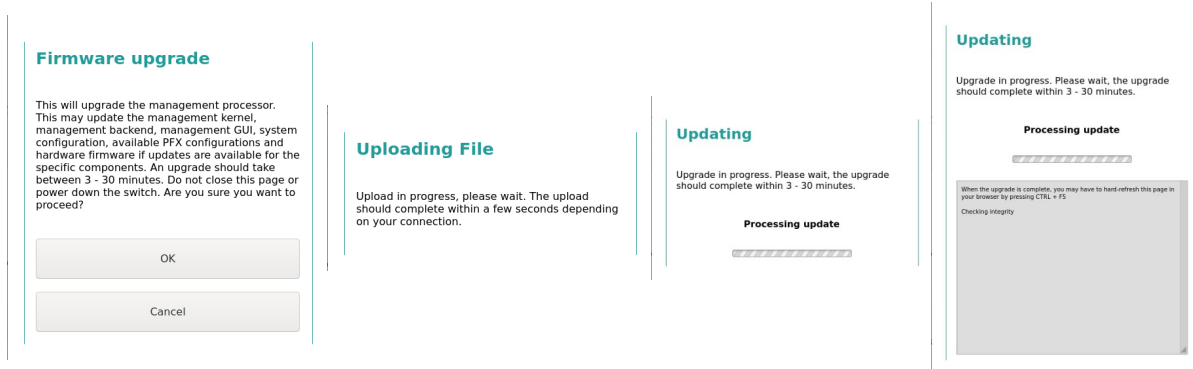
Current password

New password

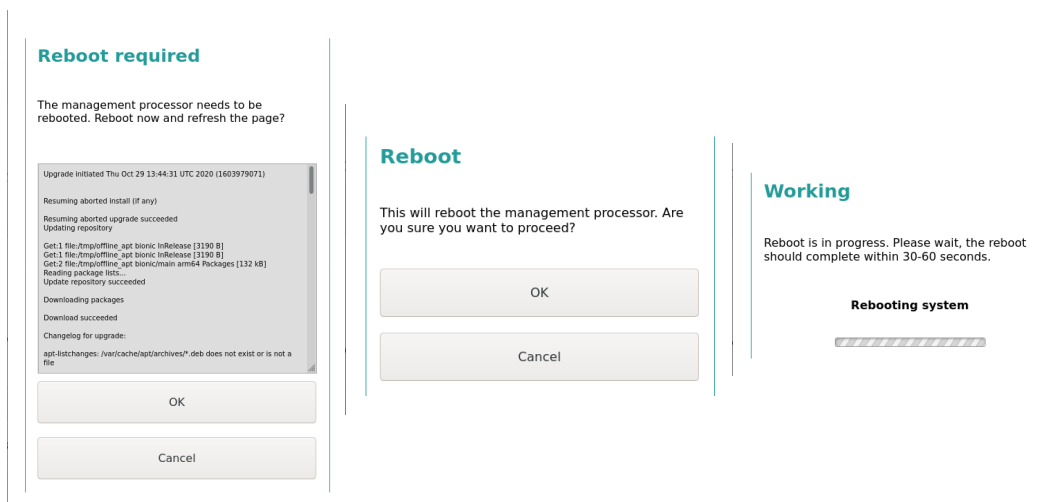
Confirm password

Apply

5. Press the “Start update” button and press “OK” on the “Firmware upgrade dialog”. Wait while zip file is uploaded. After the file has finished uploading the upgrade process will start automatically. The upgrade can take up to 60 minutes. **Warning: PCIe traffic may be interrupted during this stage!** The browser window can be safely closed during this operation. The web interface may also be logged out during the upgrade, if it does, please log in again to monitor the progress of the upgrade.



6. When the upgrade is complete you may be prompted to reboot the MXS824 switch.



Please note that the system upgrade routine does not automatically upgrade your active PFX configuration to the latest version! Refer to section “[PFX PCIe configuration upgrade instructions](#)” on page 15.

Upgrade through factory reset

You can perform an offline and manual upgrade and/or factory reset using a universal SD card image. Note that this upgrade routine will reset all software and hardware back to factory defaults, all current settings and custom files on the target MXS824 switch will be destroyed.

1. Download the 1.5.2 Management release image from Dolphin:

https://dl.dolphinics.com/mxs/sdcard/mxs824_1.5.2.img.xz

Please verify the integrity of the download by checking the sha256sum:

4f0736258ea908ea5cc11f7651b16bfb72145bd97a6eb936d238e80003736647

2. Power off and eject your SD card from the MXS824. Insert it into the machine where you downloaded the image.

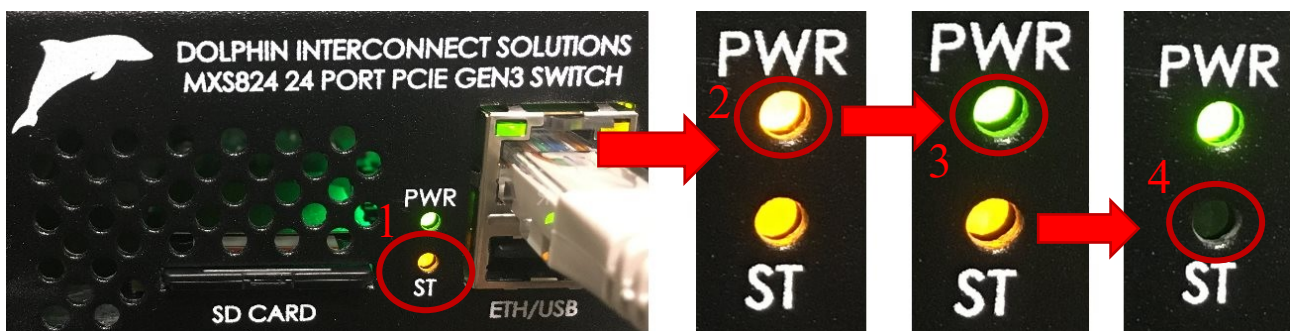
3. Burn the image to the sdcard:

```
# sha256sum mxs824_1.5.2.img.xz
4f0736258ea908ea5cc11f7651b16bfb72145bd97a6eb936d238e80003736647 mxs824_1.5.2.img.xz

# xzcat mxs824_1.5.2.img.xz | sudo dd of=/dev/<SDCARD> bs=4M status=progress conv=fdatasync
oflag=direct
```

4. Carefully insert the SD card into the MXS824 switch and insert the power cable.

5. The ST (status) LED should shortly become solid orange as shown in the picture below. This indicates that the self-install procedure is in progress. PWR will turn orange after some time, then return to green again. Wait until the ST LED becomes dark again. The entire procedure will take several minutes, but should complete within 30 minutes.



6. The switch is now upgraded and available with static IP 192.168.1.210. The PCIe switch is running with the latest NTB 6 port x16 configuration.

NB: although this routine resets the MXS software and hardware it may leave recoverable data on the SD card.

PFX PCIe configuration upgrade instructions

For safety and compliance, the system upgrade routine described in the previous sections does not automatically upgrade your active PFX PCIe configuration to the latest version!

It is recommended that you upgrade your PFX configuration to the latest VER8 if you are using one of the “Standard” (default) configurations provided by Dolphin. Note that these instructions only apply if you are on Management version 1.4.2 or later, running PFX configuration VER7 or older.

1. Go to the “Configuration Management” section of the PCIe page. If a newer version of the currently running configuration is available, it will look like this:

Configuration Management

Change the running configuration of the switch, or delete unused ones. Changing configuration will reset the PCIe switch, halting all traffic, and should not be done in a production environment.

Active configuration

Name	NTB 6 port x16
File	MXS824_NTB_SINGLE_6_PORTS_x16_VER6_image.data
Description	NTB switch with 6 ports and x16 link width.
Version	6
Ports	6
Width/Speed	x16, Gen3
Checksum	3b3ad220ed19347f69345afdf7eccd3f686ccf99e4b813e3cc65c93f9c13f3af

New version available!

A new version of your current configuration is available

Update now!

Manage configuration

Group: All

Type: All

Topology: All

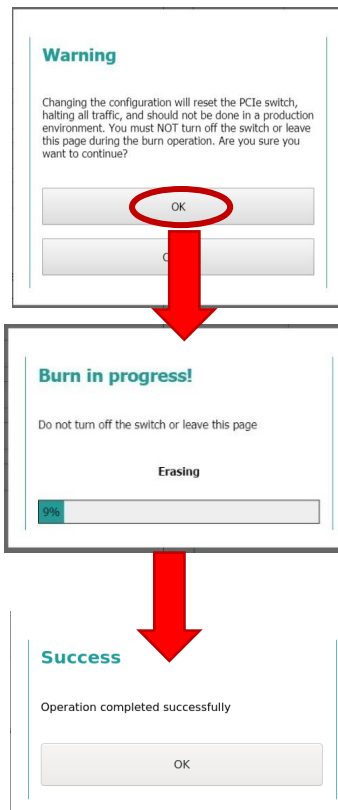
Name: All

Selected configuration

File	-
Description	-
Version	-
Ports	-
Width/Speed	-
Protected	-
Checksum	-

Change configuration Delete configuration(s)

2) Click the [Update now!] button to upgrade to the latest version of the currently running configuration. Approve the warning prompt to upgrade your configuration.



3) Active configuration should show “Version 8” once completed.

4. You can optionally delete all old configurations. To do so select the group to delete “Standard (VER#)”. And click the [Delete configuration(s)] button. It’s not possible to delete the latest configurations. Version 7 and earlier configurations are all obsolete.

Configuration Management

Change the running configuration of the switch, or delete unused ones. Changing configuration will reset the PCIe switch, halting all traffic, and should not be done in a production environment.

Active configuration

Name	NTB 6 ports x16
File	MXS824_NTB_SINGLE_6_PORTS_x16_VER8_image.data
Description	NTB switch with 6 ports and x16 link width.
Version	8
Ports	6
Width/Speed	x16, Gen3
Checksum	2f2f65b9a7d9038c8edf08e2bb1923f4c4bbd03e56e450ac54911878f9328b50

Manage configuration

Group:

Type:

Topology:

Name:

Selected configuration

File	MXS824_NTB_SINGLE_6_PORTS_x16_VER8_image.data
Description	NTB switch with 6 ports and x16 link width.
Version	8
Ports	6
Width/Speed	x16, Gen3
Protected	Yes
Checksum	2f2f65b9a7d9038c8edf08e2bb1923f4c4bbd03e56e450ac54911878f9328b50