MSTFLINT Package - Firmware Burning and Diagnostics Tools Release Notes

Rev 4.7.0

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Release Update History

Table 1 - Release Update History

Release	Date	Description
Rev 4.7.0	June 28, 2017	Initial release of this mstflint version

1   Overview

These are the release notes for Rev 4.7.0 of the mstflint.

This release supports the following operating systems: Linux. Please see the supported platform table for further details.

The tools functionality is identical in all operating systems unless otherwise noted.

1.1   Package Tools

The following is a list of the available tools in the package, together with a brief description of each tool. The tools apply to single switch systems or adapter cards. The mstflint tools do not provide cluster wide functionality.

Table 2 - mstflint Available Tools

Category	Tool	Description
Firmware Update and Configuration	mstflint	This tool burns a firmware binary image or an expansion ROM image to the Flash of a Mellanox network adapter/switch device. It includes query functions to the burnt firmware image and to the binary image file.
	mstconfig	Allows the user to change some of the device configurations without having to create and burn a new firmware.
Debug and Diagnostics Utilities	mstregdump	Dumps device internal configuration data.
	mstmcra	Reads/writes a single word from/to a device configuration register space

Detailed installation instructions along with complete descriptions of the various tools in the package can be found in the *Mellanox Firmware Tools User's Manual*.

1.2 Supported Operating Systems and Platforms

mstflint is supported on the following platforms:.

Table 3 - Supported Operating Systems and Platforms

OS	Arch
RHEL6.2	64 Bit
RHEL6.3	64Bit
RHEL 6.4	64 Bit
RHEL6.5	64 Bit
RHEL6.6	64 Bit
RHEL6.7	64 Bit
RHEL6.7	PPC64
RHEL6.8	64 Bit
RHEL6.9	64 Bit
RHEL6.9	PPC64
RHEL7.0	64 Bit
RHEL7.1	64 Bit
RHEL7.2	64 Bit
RHEL7.2	PPC64
RHEL7.2	PPC64LE [Power8]
RHEL7.2	ARM
RHEL7.3	64 Bit
RHEL7.3	PPC64
RHEL7.3	PPC64LE [Power8]
RHEL7.3	ARM
Debian 8.0	64 Bit
Debian 8.1	64 Bit
Debian 8.2	64 Bit
Debian 8.3	64 Bit
Debian 8.7 [Kernel 4.4]	64 Bit
Debian 7.11	64 Bit
Fedora 20	64 Bit
Fedora 21	64 Bit
Fedora 23	64 Bit
Fedora 23	PPC64LE [Power 8]
Fedora 24	64 Bit
OEL 6.6	64 Bit

Table 3 - Supported Operating Systems and Platforms

OS	Arch
OEL 6.7	64 Bit [UEK]
OEL 6.8	64 Bit
OEL 7.1	64 Bit [UEK 3]
OEL 7.2	64 Bit [UEK 3]
Sles11 SP3	64 Bit
Sles11 SP4	64 Bit
Sles11 SP4	PPC64
Sles12	64 Bit
Sles12SP1	64 Bit
Sles12SP1	PPC64LE
Sles12SP2	64 Bit
Sles12SP2	PPC64LE
XenServer6.5	64 Bit
XenServer7.0	64 Bit
WindRiver6.0	64 Bit
Ubuntu 12.04.5	64 Bit
Ubuntu 14.04	64 Bit
Ubuntu 14.04	PPC64LE [Power 8]
Ubuntu 14.10	64 Bit
Ubuntu 15.04	64 Bit
Ubuntu 15.10	64 Bit
Ubuntu 16.04	64 Bit
Ubuntu 16.10	64 Bit
Ubuntu 17.04	64 Bit
Kernel.org 4.7	x86_64
Kernel.org 4.8	x86_64
Kernel.org 4.9	x86_64
Kernel.org 4.10	x86_64
Kernel.org 4.11	x86_64

1.3   Supported Flash Types

mstflint supports the following Flash types.

Table 4 - Supported Flash Types

Vendor	Flash Family	Tested P/N
Micron	M25Pxx	M25P16
	M25PXxx	M25PX16
	N25Qxxx	N25Q032
Winbond	W25QxxBV	W25Q32BV
Spansion	S25FL11xx	S25FL116K
Atmel	AT25DFxxx	AT25DF161

1.4   Supported Mellanox ICs

With respect to mstflint, Mellanox IC devices are divided into two groups: Group I and Group II (4th generation and 5th generation, respectively). The ICs are listed in the following table:

Table 5 - Mellanox IC Devices

IC Group	IC Device
Group I/4th Generation	• ConnectX®-3 • ConnectX®-3 Pro • SwitchX® • SwitchX®-2
Group II/5th Generation	• Connect-IB® • Switch-IB™ • Switch-IB™ 2 • Spectrum™ • ConnectX®-4 • ConnectX®-4 Lx • ConnectX®-5 • ConnectX®-5 Ex

2 Changes and New Features in Rev 4.7.0

Table 6 - Changes and New Features in Rev 4.7.0

Component/ Tool	Description	Operating System
Secure Firmware Update	Added support for Secure Firmware Update in ConnectX-4 and ConnectX-4 Lx.	Linux
Build	Added a new flag to configure '--enable-openssl' which will enable all the openssl features in the tools, like the CheckSum, and sign images	Linux
mstflint	Added sign command for secured images. This feature is available only if the package was configured and compiled with `'--enable-openssl'`.	Linux
	Added a flag to enforce working in a non-secure mode, if available (according to security type).	
	Added expansion ROM CPU architecture to the flint query when the expansion ROM is available.	All
mstconfig	Added new mstconfig TLVs.	All
	Added support for generating and applying TLV configuration files.	All

For further information, please refer to the MFT User Manual.

3   Known Issues

The following table provides a list of known issues and limitations in regards to this release of the Mellanox Firmware Tools.

Table 7 - Known Issues and Limitations (Sheet 1 of 2)

Internal Ref.	Issue
207320/ 933032	**Description:** Tools that run in parallel on the same device may interrupt one another, and may cause the device to be in an undefined state.
	Workaround: Avoid running more than a single tool at a time with the same device
	Keywords: General
592673	**Description:** PCI access in PowerPC machines is up to 10 times slower than other platforms, therefore, there are performance issues on all tools running on PowerPC machines.
	Workaround: N/A
	Keywords: General
607508	**Description:** Wrong localization settings in the operating system cause some tools to fail with error: `locale::facet::_S_create_c_locale name not valid`
	Workaround: Run: `export LC_ALL=C`
	Keywords: General
676412	**Description:** Aggressive killing of a tool that is locking the vendor specific semaphore (in ConnectX-4/ConnectX-4 Lx devices) will leave the semaphore locked, and any tool will get stuck waiting for semaphore.
	Workaround: Run: `mstmcra -c <pci device>`
	Keywords: General
-	**Description:** Firmware burn will fail due to invalid/old timestamp on ConnectX-4/ConnectX-4 Lx devices running these firmware versions: 12.14.0060/14.14.0060, or 12.14.0074/14.14.0075
	Workaround: Use mstflint v4.1.0 to upgrade/downgrade the firmware version.
	Keywords: Firmware Burning Tools
692397	**Description:** On ConnectX-3/ConnectX-3 Pro adapter cards, when burning a new firmware image that does not contain an expansion ROM on a flash that contains firmware and expansion ROM, the burning tool will save the expansion ROM in the flash.

	Workaround: This issue can be avoided by:
	1. Removing the ROM from the flash before the FW update process by running the following mstflint command:
	    `mstflint -d <dev> --allow_rom_change drom`
	2. Adding the
	    `--use_image_rom` flag to the mstflint FW update command

	Keywords: Firmware Burning Tools

Table 7 - Known Issues and Limitations (Sheet 2 of 2)

Internal Ref.	Issue
534010/ 647911	**Description:** mstconfig allows setting port parameters for both ports from a single function on ConnectX-4. This poses a security issue since a certain physical function is able to change port parameters for all ports regardless of its designated port.
	Workaround: N/A
	Keywords: mstconfig
221201	**Description:** The firmware update process in Connect-IB™, Switch-IB™, ConnectX®-4, ConnectX®-4 Lx and ConnectX®-5 and may take up to two minutes.
	Workaround: N/A
	Keywords: mstflint
326763	**Description:** The `sg` command on Connect-IB™, Switch-IB™, ConnectX®-4, ConnectX®-4 Lx and ConnectX®-5 fails if the `-override_cache_replacement` flag is not used.
	Workaround: Set the GUIDs only when firmware is not active (driver is not loaded) by using the flag `-override_cach_replacement`
	Keywords: mstflint
409212/ 408374	**Description:** Attempting to access Remote/MTUSB device for parallel does not work well.
	Workaround: Avoid working in parallel through these interfaces.
	Keywords: mstflint
540073	**Description:** Attempt to burn firmware while specifying the -use_fw flag fails as firmware does not support write operation on this flash.
	Workaround: Do not use the -use_fw flag for burn operations.
	Keywords: mstflint
927526	**Description:** When running the mstconfig query after mstconfig reset, the mstconfig query does not show the correct configuration that should be loaded upon the next boot.
	Workaround: To view the default configuration (under the Default column) run: `mstconfig –d <device> –e query.`
	Keywords: mstconfig
1063778	**Description:** Secure firmware Update: The flint brom and drom commands are not supported.
	Workaround: N/A
	Keywords: Secure Firmware Update,, flint

4 Bug Fixes History

Table 8 lists the history of bugs fixed

Table 8 - Bug Fixes History

Internal Ref.	Issue
691073	**Description:** In Linux, updating firmware on an unmanaged InfiniScale IV switch by Inband fails with the following error: `MFE_SEM_LOCKED`
	Keywords: Firmware Burning Tools
	Discovered in Release: 4.3.0
	Fixed in Release: 4.4.0
702505/ 735109	**Description:** Fixed an issue which caused mstflint brom/drom operations to fail when using 5th Generation devices firmware.
	Keywords: mstflint
	Discovered in Release: 4.3.0
	Fixed in Release: 4.4.0

5 History of Changes and New Features

Table 9 - History of Changes and New Features

Component / Tool	Description	Operating System
Rev. 4.6.0		
Adapter Cards	Added support for ConnectX-5/ConnectX-5 Ex adapter cards. **Note:** ConnectX-5/ConnectX-5 Ex adapter cards are currently at **Beta** level.	All
mstconfig	Added an option to query active (current) configurations in mlx-config.	All
	Added new parameters in VPI settings configuration: XFI_MODE, PHY_TYPE, FORCE_MODE	
	Added a new parameter to the PCI configuration NON_PREFETCHABLE_PF_BAR	
Rev. 4.5.0		
General	Added support for Innova IPsec 4 Lx EN /Innova Flex 4 Lx EN	Linux
mstconfig	Enabled mlxconfig to work with a database that describes the meta data of the TLVs configuration of fifth generation devices.	All
	Added the following configuration TLVs to mlxconfig: • MPFS • KEEP LINK UP • SW OFFLOAD CONF	All
mstflint	Added support for viewing and changing OEMs' device flash parameters using an IB device when using flint.	All
Rev. 4.4.0		
mstconfig	Added the following new configurations: • Number of TCs • Number of VLs • Enable DCBX in CEE mode • Enable DCBX in IEEE mode • Allow the NIC to accept DCBX configuration from the remote peer • Enable DCBX • Enable the internal LLDP client • Select which LLDP TLV will be generated by the NIC	All
General	Added support for all tools to work when the MST driver is not installed	Linux
mstregmcra	Added support for clearing VSEC PCI semaphore by the mstregm-cra tool. The new capability can be used after killing a tool force-fully without clearing the semaphores. Supported devices: ConnectX-4, ConnectX-4 Lx and Connect-IB	All

Component / Tool	Description	Operating System
mstconfig	Added a backup command in mstconfig which allows user to save backup of the non-volatile configurations in a RAW file. This file can be set on the device by using the `set_raw` command	All
Rev. 4.3.0		
General	Added support for Spectrum device.	All
	Added support for Switch-IB 2 device.	All
	4th generation and 5th generation IC devices are now also named Group I ICs and Group II ICs, respectively.	N/A
mstconfig	Added support for setting some of the parameters in textual values in addition to numerical values.	All
	Added new configurations: • The PF log bar size • The VF log bar size • The number of PF MSIX • The number of VF MSIX • port owner • Allow RD counters • IP protocol used by flexboot	All
	Added the option to display the configuration's default values.	All
mstflint	Added support to calculate checksum on selected sections in the firmware image.	All
	Added the option to attach a timestamp to the firmware image.	All
Burning Tools	Improved firmware burn performance in livefish mode on 5th generation devices.	All
	Added the ability to show the running firmware version in case it does not match with the burnt firmware version on the flash. This case generally occurs after firmware upgrade and before firmware reload.	All