



# Intel<sup>®</sup> Ethernet NVM Update Tool

Quick Usage Guide for VMware ESX

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Networking Division (ND)

*February 2016*

Revision 1.0  
333908-001



## Revision History

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Revision	Date	Comments
1.0	February 10, 2016	Initial release (Intel Public).



## 1.0 Introduction

This document demonstrates how to update the Non-Volatile Memory (NVM) on both the Intel® Ethernet Controller X710/XL710 and the Intel® Ethernet Converged Network Adapters using the Intel® Ethernet NVM Update Tool (NVM Update Tool). It is a guide to servicing NVM images, firmware, and drivers of the Intel® Ethernet X710/XL710 by customers and service technicians in the field.

**Note:** The information in this document is for experienced system administrators who are familiar with server, network, and data center concepts and technologies.

## 2.0 Update Both NVM and Driver at the Same Time

Keeping up with software changes, performance enhancements, or security updates requires the most current hardware drivers for supported systems. Previous updates to Intel network adapters were driver specific. With the Intel® X710/XL710 10/40 GbE adapters, both the firmware (device NVM image) and network drivers are field-serviceable, allowing the NVM image and network driver to be updated as a matched set. Updating the device image and driver together can increase key features including performance, manageability, media types, physical port counts, virtualization, offloads, remote boot options, VLAN support, teaming, and Receive Side Scaling.

**Note:** Update to the most current i40e driver prior to running the NVM Update Tool to ensure the newest features of the NVM image can be installed.

The NVM Update Tool has a built-in integrity check that ensures only Intel-approved firmware updates on the Intel® X710/XL710 devices. Integrity validation of NVM updates is provided by a digital signature. NVM updates are validated prior to invalidating the old NVM configuration, so the old NVM and the configuration are still usable should the update fail.

**Note:** Updating to the most current NVM (with the NVM Update Package) and driver does not update the Option ROM. Intel recommends an Option ROM update after the NVM and driver are updated. Refer to the [User Guides for Intel® Ethernet Adapters](#) page for the most current Option ROM update process version.

**Note:** When running SR-IOV, it is recommended that all Virtual Functions be disabled prior to the NVM Update process.

## 3.0 Obtaining New Images

The [Intel Download Center \(X710 or XL710\)](#) is Intel's repository for the latest software and drivers for Intel products. The NVM Update Packages for Windows, Linux, ESX, FreeBSD, and EFI/EFI2 are located at:

<http://downloadcenter.intel.com/download/24769>

Use the Software/NVM matrix table in the [Intel® Ethernet Controller XL710 Feature Support Matrix](#) to ensure firmware image and driver compatibility. This document is continuously maintained and always up-to-date.



## 4.0 Verifying Driver, Image Version, and Package Inventory

The ESX version of the NVM Update Tool works the same as the open-source version. It requires a network driver on the system prior to the NVM update, and it is recommended that the most current driver be installed on the system. VMware ESX network drivers are available from the VMware download site.

The first thing to check on the system receiving the update is the most current network driver and NVM image. This can be done with the **ethtool** interface command using the **-i** option, as follows.

```
ethtool -i ethX
```

Output of the **ethtool -i** shows the running version of the network driver, the firmware version, and ETrackID, as follows:

```
driver: i40e
version: 1.4.25
firmware-version: 4.25 0x800014cc 0.0.0
bus-info: 0000:01:00.0
```

The last 4 hex characters in the firmware version denote the ETrackID.

In preparation for the firmware update, update the network driver to the most current version and identify the path to the NVM Update Tool on the target system.

## 5.0 Running the NVM Update Tool

The NVM Update Tool runs from a Command-Line Interface (CLI). There are optional CLI attributes for specific tasks and are recommended for advanced users only. As CLI syntax, the NVM Update Tool can be scripted to run across large environments. An example of the update syntax is as follows:

```
nvmupdate64e - command syntax
nvmupdate64e -l fileoutput.txt - command with optional attribute
```

**Note:** For assistance with optional CLI attributes, contact your Intel Representative.

Place the Intel® Ethernet NVM Update package on the system and extract the tar file. Then navigate to the location of the NVM Update Tool executable to run the tool. Run the tool like any CLI executable. An example of the ESX version of the NVM Update Tool update and its output is shown in [Figure 1](#).

**Note:** A typical update takes several minutes to complete.



```
[root@localhost:/vmfs/volumes/datastore(1)/XL710/ESXi_x64] ./nvmupdate64e

Intel(R) Ethernet NVM Update Tool
NVMUpdate version 1.26.17.09
Copyright (C) 2013 - 2015 Intel Corporation.

WARNING: To avoid damage to your device, do not stop the update or reboot or power off the
system during this update.
Inventory in progress. Please wait [..+*****]

Num Description                               Device-Id B:D  Adapter Status
=== =====
01) Intel(R) Ethernet Converged Network Ad 8086-1572 01:00 Update available

Options: Adapter Index List (comma-separated), [A]ll, e[X]it
Enter selection: a
Would you like to back up the NVM images? [Y]es/[N]o: y
Update in progress. This operation may take several minutes.
[..+*****]
Please Power Cycle your system now and run the NVM update utility again to complete the
update. Failure to do so will result in an incomplete NVM update.

Tool execution completed with the following status: All operations completed successfully.
Press any key to exit.
[root@localhost:/vmfs/volumes/datastore(1)/XL710/ESXi_x64]
```

Figure 1. Example Update and Output

When the flash image write completes, the tool asks for a reboot of the system to complete the update process and load the new firmware. After the reboot, verify the new firmware with **ethtool**, as follows:

```
driver: i40e
version: 1.4.25
firmware-version: 4.42 0x8000191c 0.0.0
bus-info: 0000:01:00.0
```

**Note:** When updating from early NVM images, the NVM Update Tool may indicate that a power-cycle of the system is necessary.

**Note:** The NVM update may require a two-step process depending on the initial image revision. Use the Software/NVM Compatibility table to verify the latest image versions.

In this particular update, the initial firmware version was 4.25 from Software Release 1. After running, the **ethtool** reports firmware version 4.42 from software release 3. This update requires a second run of the NVM Update Tool. After the second run and a reboot, the version is now at 5.02 from Software Release 5, as follows:

```
driver: i40e
version: 1.4.25
firmware-version: 5.02 0x800020e2 0.0.0
bus-info: 0000:01:00.0
```

**Note:** An NVM image downgrade process is available from Intel. Contact your Intel Representative for support of this process.



## **6.0 Summary**

Updating the NVM and network driver can increase performance, manageability, and reliability of the Intel® X710/XL710 Ethernet Converged Network Adapter. The update process has a built-in integrity feature to ensure that only Intel-approved firmware code is able to be updated after manufacturing. This procedure is performed each time an attempt is made to update one of the protected modules.

Intel Customer Support Services offers a broad selection of technical and customer support programs. For more information, contact your local Intel representative. Service and availability may vary by country.

For more information on the Intel® Ethernet X710/XL710 adapter family go to the following links:

- <http://www.intel.com/content/www/us/en/network-adapters/converged-network-adapters/ethernet-x710.html>
- <http://www.intel.com/content/www/us/en/embedded/products/networking/ethernet-controller-xl710-family.html>
- <http://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/ethernet-x710-brief.pdf>
- <http://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/xl710-10-40-gbe-controller-brief.pdf>



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