

Intel® Ethernet Controller Products

Release Notes for Software Release 25.2

Intel Corporation

Revision 1.1
August 2020
630597-002

Revision History

Revision	Date	Comments
1.0	July 2020	• Initial release (Intel Public).
1.1	August 2020	• Added Intel® Ethernet Network Adapter X722 NVM version. • Added Intel® Ethernet 700 Series firmware: — Features. — Fixed issues. — Known issues.

1.0 Overview

This document provides an overview of the changes introduced in the latest Intel® Ethernet controller/ adapter family of products. References to more detailed information are provided where necessary. The information contained in this document is intended as supplemental information only; it should be used in conjunction with the documentation provided for each component.

These release notes list the features supported in this software release, known issues, and issues that were resolved during release development.

1.1 Supported Intel® Ethernet Controller Devices

Controller Family	Windows Driver Version	Linux Driver Version	FreeBSD Driver Version	NVM Version
Intel® Ethernet 800 Series	1.4.29.x	1.0.x	0.26.x	2.0x
Intel® Ethernet 700 Series Intel® Ethernet Network Adapter X722	1.12.177.x	2.12.x	1.12.x	8.0 4.5
Intel® Ethernet 500 Series Intel® Ethernet Controller X550	4.1.197.x	5.8.x	3.3.x	N/A 3.0
Intel® Ethernet 300 Series	12.18.11.x	5.3.x	2.5.x	N/A
Intel® Ethernet 200 Series	12.19.0.x	5.3.x	2.5.x	N/A
Intel® Ethernet Controller 82598	2.4.36.x	5.8.x	3.3.x	N/A
Intel® Ethernet Controller 8257x	9.16.10.x	5.3.x	2.5.x	N/A

For help identifying your network device and finding supported devices, click here:

https://www.intel.com/content/www/us/en/support/articles/000005584/network-and-i-o/ethernet-products.html

1.2 New Features

1.2.1 Hardware Support

Release	New Hardware Support
• 25.2	• Intel® Ethernet Controller E810-C • Intel® Ethernet Controller E810-C for backplane • Intel® Ethernet Controller E810-C for QSFP • Intel® Ethernet Controller E810-C for SFP • Intel® Ethernet Network Adapter E810-C-Q2 • Intel® Ethernet Network Adapter E810-XXV-4

1.2.2 Software Features

Release	New Software Support
• 25.2	• The Intel® Ethernet Controller E810 supports up to 100Gb/s throughput for the mainstream market for a variety of workloads used in Communications, Storage, Enterprise, Hybrid Cloud, Artificial Intelligence etc. — Application Device Queues (ADQ) feature that reduces network jitter and provides better and more predictable performance for latency-sensitive applications. — Supports both iWARP and RoCEv2 RDMA, selectable via software per port for low latency and high throughput workload. • For X722 devices installed in a Linux system, added a mechanism to set Forward Error Correction (FEC) mode in backplane designs.

1.2.3 Firmware Features

Release	New Firmware Support
• 25.2	• For the X722, optimizations were made to improve time-to-enter recovery mode. • For the X710/XXV710/XL710 and V710-AT2/X710-AT2/TM4: — Support added in compliance with DSP2054 v1.0 PLDM NIC Modeling specification for XXV710-based OCP3.0 adapters. — Improvements in PHY access using semaphore in XXV710-based adapters. This is primarily for PHY access in debug mode. — Optimizations made to improve time-to-enter recovery mode. — Multi-queue support was added into 8.0 firmware version. — Added capability to direct traffic was added into VFs based on IP4 destination address for both tunneled and non-tunneled packets (1.5K each).

1.2.4 Removed Features

No previous features were removed for this release.

2.0 Fixed Issues

2.1 Intel® Ethernet 800 Series

This is the initial software release supporting the Intel® Ethernet 800 Series of products.

2.2 Intel® Ethernet 700 Series

2.2.1 General

- Fixed: MPLS (`mpls-pay.pkg`) and eCPRI (`ecpri.pkg`) DDP packages cannot be loaded.

2.2.2 Firmware

2.2.2.1 Intel® Ethernet Network Adapter X722

- Removed an AQ command that should not be a part of recovery mode. The change was made to align with the internal recovery mode specification.
- PLDM fields in the platform data region were reported in integer format instead of real32 (IEEE-754 notation). The fields are now reported as real32. PLDM responses in prior firmware releases might get misinterpreted by the Memory Controller (MC).

2.2.2.2 Intel® Ethernet Controller X710/XXV710/XL710 and V710-AT2/X710-AT2/TM4

- When ports are disabled on X710-based BASE-T PHY adapters (Intel® Ethernet Converged Network Adapter X710-T4, Intel® Ethernet Controller X710-AT2/TM4 or V710), the device might enter recovery mode with older releases. This is due to the firmware setting MDIO clause to unknown when the port is disabled. The initial fix was to have firmware set the mode to a known default state.
- Two PLDM fields (*MaxReadable* and *NominalValue*) in the platform data region were uninitialized. These were set to the correct values.
- PLDM fields in the platform data region were reported in integer format instead of real32 (IEEE-754 notation). The fields are now reported as real32. PLDM responses in prior firmware releases might get misinterpreted by the MC.

2.2.2.3 Intel® Ethernet Controller V710-AT2/X710-AT2/TM4

- 10GBASE-T PHYSFP+ TXFFE coefficients were tuned to optimize conformance test results for signal rise/fall times and eye mask hit ratio.

Note: The tuning settings cannot be updated via fields.

2.2.3 Linux Driver

- Fixed: More than 16 VLANs assigned to a Virtual Function (VF) in untrust mode are operational.
- Fixed: Ethtool (via `ethtool -m` comand) and `dmesg` display information that the SFP module is not inserted on the platform where there is no SFP cage.
- Fixed: FEC mode setting is not available for Intel® Ethernet Controller X722 devices (via ethtool --show-fec command).
- Fixed: VF is not operational when a number of queues are changed without turning off VF first.
- Fixed: List of MAC addresses assigned to VF is removed after an Intel AVF driver reload.
- Fixed: Reloading the Intel AVF driver clears VF mirrors ingress settings while both Physical Function (PF) and VF mirrors have been added.
- Fixed: Despite being added, PF egress or ingress mirrors still show as turned off.
- Fixed: Trunk settings have no effect on filtering traffic of host VLANs.
- Fixed: Allow broadcast (allow_bcast) option is not present in `sysfs`.

2.2.4 Linux RDMA Driver

- Fixed: In RedHat 8.1, the i40iw driver does not compile.

2.2.5 NVM Update Tool

- Fixed: The Intel® Ethernet Controller X722 adapter doesn't allow for updates through other physical ports when dummy deviceId 0x37CC is detected at the first physical port. It's not possible to swap between different OCP PHY modules.
- Fixed: On the Intel® Ethernet Network Adapter X710-T4L and the Intel® Ethernet Network Adapter X710-T4L for OCP* 3.0 X710-T4L, fast update executed by the NVM Update Tool with RESET TYPE: PHY entry in config file ends with PHY reset failed error and exit code 18.

2.2.6 EFI Driver

- Fixed: On X710 OCP3.0 adapters, Wake on LAN (WoL) settings can only be saved after a power cycle.

2.2.7 Virtualization

- Fixed: SR-IOV is disconnected when 2.5G or 5G speed is set on Intel® Ethernet Network Adapter X710TL2 GbE RJ45 PCIe.

2.3 Intel® Ethernet 500 Series

2.3.1 EEupdate

- Fixed: EEupdate doesn't provide information that changes of device ID and MAC addresses are locked.

2.3.2 QoS Windows

- Fixed: Powershell command Get-NetAdapterQos does not show current setting after a firmware transition from non-willing to willing.

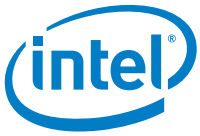
2.4 Intel® Ethernet 300 Series

None for this release.

2.5 Intel® Ethernet 200 Series

2.5.1 EFI Driver

- Fixed: Intel® Ethernet Controller I210 might not establish a link with probability of one failure per 1000 power cycles or even more. Such behavior can be observed only if power cycle is performed during D3 state.



3.0 Known Issues

3.1 Intel® Ethernet 800 Series

3.1.1 General

- The link might go down when Intel device drivers load using auto-speed (default) with non-specification compliant modules. Manually setting the speed might recover the link.
- Poor receive performance and dropped packets.

  Devices based on the Intel® Ethernet Controller 800 Series might exhibit poor receive performance and dropped packets. The following might improve the situation:

  — In your system's BIOS/UEFI settings, select the Performance profile.

    - For Microsoft Windows Server* operating systems:

      In the Power Options control panel, set the system to use the High Performance Profile.

    - For Linux operating systems:

      On RHEL 7.x/8.x, use the tuned power management tool to set the Latency-performance profile.

    - In other operating systems and environments, use the equivalent tool to set the equivalent profile.

    - For FreeBSD operating systems:

      Do not modify the ACPI, P-state, or C-state system controls (`sysctls`) to values intended to save power on the system.

    - For VMWare ESX, instructions to set power management to High Performance in the operating system can be found here:

      https://docs.vmware.com/en/VMware-vSphere/6.7/com.vmware.vsphere.resmgmt.doc/GUID-F48D75C7-2461-4643-8A3A-B0383146F3AA.html#GUID-F48D75C7-2461-4643-8A3A-B0383146F3AA

- Applications using E810 in a backplane configuration with no WoL, and no management during power-up might experience no link, which is fixed by any form of reset.
- VXLAN switch creation on Windows Server 2019 Hyper V might fail.
- Some devices support auto-negotiation. Selecting this causes the device to advertise the value stored in its NVM (usually disabled).
- Intel does its best to find and address interoperability issues, however there might be connectivity issues with certain modules, cables or switches. Interoperating with devices that do not conform to the relevant standards and specifications increases the likelihood of connectivity issues.
- At lower packet rates flow control and/or packet drops might be observed.
- In order for an Intel® Ethernet 800 Series-based adapter to reach its full potential, you must install it in a PCIe Gen4 x16 slot. Installing on fewer lanes (x8, x4, x2) and/or Gen3, Gen2 or Gen1, impedes the full throughput of the device.

3.1.2 Firmware

3.1.2.1 Intel® Ethernet Controller XL710

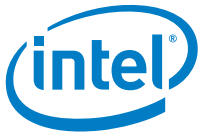
- For XL710-based NVMs, failure to enter recovery mode properly was observed in internal testing. This might be seen during NVM update flows. This issue has been root caused and the fix should be integrated in the next firmware release.

3.1.2.2 Intel® Ethernet Controller V710-AT2/X710-AT2/TM4

- Incorrect *DeviceProviderName* is returned when using RDE *NegotiateRedfishParameters*. This issue has been root caused and the fix should be integrated in the next firmware release.

3.1.3 Linux Driver

- Adding a physical port to the Linux bridge might fail and result in Device or Resource Busy message if SR-IOV is already enabled on a given port. To avoid this condition, create SR-IOV VFs after assigning a physical port to a Linux bridge.
- When in an 8x10 configuration and using firmware LLDP, the 8TC to 4TC mapping in CEE mode does not work.
- DPDK sample applications specify a packet size of 1518 bytes. At present the PF driver does not take into account the extra 4 bytes needed if a port VLAN is configured. In this situation (when a port VLAN is configured) full sized packets of 1500 do not reach the DPDK application. In order for this to work properly, initialize the max packet length within the DPDK application to account for the possible port VLAN (specify 1522 bytes).
- When using ice Linux driver and creating a flow director rule with ethtool the ethtool stat `fdir_sb_match` might not increment even though traffic is received matching on that rule.
- Operating system traffic is not passed when using a VLAN over bridge topology. To workaround this issue, set the `rx_vlan_filter` to off and traffic will resume as expected.
- Creating MACVLAN interfaces might result in Device or Resource Busy message if SR-IOV is already enabled on a given port. To avoid this condition, create MACVLAN interfaces prior to enabling SR-IOV feature.
- Current limitations of minimum Tx rate limiting on SR-IOV VFs:
  - If DCB or ADQ are enabled on a PF then configuring minimum Tx rate limiting on SR-IOV VFs on that PF is rejected.
  - If both DCB and ADQ are disabled on a PF then configuring minimum Tx rate limiting on SR-IOV VFs on that PF is allowed.
  - If minimum Tx rate limiting on a PF is already configured for SR-IOV VFs and a DCB or ADQ configuration is applied, then the PF then configuring minimum Tx rate limiting on SR-IOV VFs on that PF is allowed.



  - If minimum Tx rate limiting on a PF is already configured for SR-IOV VFs and a DCB or ADQ configuration is applied, then the PF can no longer guarantee the minimum Tx rate limits set for SR-IOV VFs.
  - If minimum Tx rate limiting is configured on SR-IOV VFs across multiple ports that have an aggregate bandwidth over 100Gbps, then the PFs cannot guarantee the minimum Tx rate limits set for SR-IOV VFs.
- IEEE1588/PTP 1PPS does not work on Intel® E810 series adapters.

3.1.4 Linux RDMA Driver

- When using Intel MPI in Linux, Intel recommends to enable only one interface on your networking device to avoid MPI application connectivity issues or hangs. This issue affects all Intel MPI transports, including TCP and RDMA. To avoid the issue, use `ifdown <interface>` or `ip link set down <interface>` to disable all network interfaces on your adapter except for the one used for MPI. OpenMPI does not have this limitation.
- When using RoCEv2 on newer kernels, some iSER operations might experience errors related to iSER's handling of work requests. To work around this issue, set the ice fragment_count_limit devlink parameter to 13. Refer to the Devlink Configuration section of the irdma driver README for details on setting the devlink parameter.

3.1.5 Windows Driver

- When changing the Locally Administered Address the E810 reflects the updated address but the switch might not show this address in its LLDP neighbors information.
- If the link is disabled on the link partner the E810 might not report the link is down after running Powershell or DMIX. If you disable then enable the Windows driver the issue should resolve.
- If you change the DCB map on the link partner while RDMA is enabled it might cause a reset on the device.

3.1.6 Windows RDMA Driver

- With a S2D storage cluster configuration running Windows Server 2019, high storage bandwidth tests might result in a crash for a BSOD bug check code 1E (KMODE_EXCEPTION_NOT_HANDLED) with `smbdirect` as the failed module. Customers should contact Microsoft via the appropriate support channel for a solution.

3.1.7 NVM Update Tool

- Updating using an external OROM (FLB file) and opting for delayed reboot in the config file is not supported.
- In ESXi the device serial number appears as N/A.
- Intel recommends not enabling non-default modes (delayed reboot and selective preservation) with this release. Generally when using these features, errors might be reported; however, after a reboot the update should have completed successfully.
- Reboot might fail after an update if the PRESERVATION entry has NONE or SELECTIVE in config file. To workaround this issue, remove the entry and let the tool update using the default full preservation option.

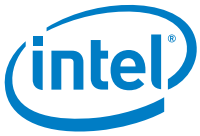
3.1.8 FreeBSD Driver

- When using the FreeBSD ice driver and the enable/disable LLDP agent status sysctl, enable/disable on one port might enable/disable on other ports.

3.1.9 Manageability

- When using PLDM Type 2 monitoring and control messages to read thermal sensor information there are several issues that will be observed:
  - Module temperature value is incorrect.
  - Inserting modules post boot will not be detected.
- When sending a Enable Channel NC-SI command when the device is in low power with link off, the link is not turned on.

  To workaround this issue, Send the Enable Channel command when in D0, or set the Set Link NC-SI command to turn the link on.
- When using the PLDM Firmware Update, the update might fail if there is CORER / GLOBR during the update as it resets the operation and the update need to be restarted. CORER/ GLOBR could be caused by the device driver or tools running on the host.



3.2 Intel® Ethernet 700 Series

3.2.1 General

- Devices based on the Intel® Ethernet Controller XL710 (4x10 GbE, 1x40 GbE, 2x40 GbE) have an expected total throughput for the entire device of 40 Gb/s in each direction.
- The first port of Intel® Ethernet Controller 700 Series-based adapters display the correct branding string. All other ports on the same device display a generic branding string.
- In order for an Intel® Ethernet Controller 700 Series-based adapter to reach its full potential, you must install it in a PCIe Gen3 x8 slot. Installing on fewer lanes (x4, x2) and/or Gen2 or Gen1, impedes the full throughput of the device.

3.2.2 Linux Driver

- On Kernel version 5.0.9 and higher, setting promiscuous mode on trusted VF leads to a periodic and endless update of this mode.Maximum number of SR-IOV VFs is 62 (instead of 63) per port. This behavior is observed when the RSS and VMDq settings are disabled. It might be observed only when using ESX-ixgben driver.
- When the second subordinate interface is added to the bonding, its MAC address becomes the same as the first added subordinate and bond interface. Reloading the PF driver and creating VFs again is needed to restore the MAC addresses.
- When two VF interfaces are in balance-tlb bonding mode, the ICMP traffic might be interrupted for a few sequences.

3.2.3 Windows Driver

- On Windows Server 2012 R2 the host might suffer a BSOD after modifying ANS team type with tagged VLAN. It can be reproduced both with GUI or a Powershell command.

3.2.4 NVM Update Tool

- Minimum Security (Rollback) Revision (MinSREV) values and Security (Rollback) Revision (SREV) are not reported in unified (hexadecimal) format via the NVM Update Tool.

3.2.5 PROSet

- On the multilingual Windows Server 2016 version Media Type and Negotiated Link Speed values in the **Identify Adapter** tab might be shown in the Portuguese language.
- Start and Stop words are missing from the blinking button in the **Identify Adapter** tab. This behavior is observed only if the German language has been chosen.
- Use Default button in the UI is missing from the **Locally Administered Address** tab.
- VLAN status might be presented as Link Down in the **Teaming/VLANs tab** whereas the status is Enabled in the Windows Device Manager.

3.3 Intel® Ethernet 500 Series

- Maximum number of SR-IOV VFs is 62 (instead of 63) per port. This behavior is observed when the RSS and VMDq settings are disabled. It might be observed only when using ESX-ixgben driver.

3.4 Intel® Ethernet 300 Series

3.4.1 Windows Driver

- WoL Magic Packets sent to the Intel® Ethernet Adapter I350-T4 OCP3.0 doesn't wake up certain platforms.

3.5 Intel® Ethernet 200 Series

None for this release.

3.6 Legacy Devices

Some older Intel® Ethernet adapters do not have full software support for the most recent versions of Microsoft Windows*. Many older Intel Ethernet® adapters have base drivers supplied by Microsoft Windows. Lists of supported devices per operating system are available at:

http://www.intel.com/support/go/network/adapter/nicoscomp.htm

4.0 NVM Upgrade/Downgrade 800 Series/700 Series and X550

Refer to the Feature Support Matrix (FSM) links listed in Related Documents for more detail. FSMs list the exact feature support provided by the NVM and software device drivers for a given release.

5.0 Languages Supported

Note: Microsoft Windows and Windows Server Operating Systems.

This release supports the languages listed in the table that follows:

Languages	
English French German Italian Japanese	Spanish Simplified Chinese Traditional Chinese Korean Portuguese

6.0 Related Documents

Contact your Intel representative for technical support about Intel® Ethernet Series devices/adapters.

6.1 Feature Support Matrix

These documents contain additional details of features supported, operating system support, cable/ modules, etc.

Device Series	Support Link
Intel® Ethernet 800 Series	https://cdrdv2.intel.com/v1/dl/getContent/630155
Intel® Ethernet 700 Series: — X710/XXV710/XL710 — X722 — X710-TM4/AT2 and V710-AT2	 https://cdrdv2.intel.com/v1/dl/getContent/332191 https://cdrdv2.intel.com/v1/dl/getContent/336882 https://cdrdv2.intel.com/v1/dl/getContent/619407
Intel® Ethernet 500 Series	https://cdrdv2.intel.com/v1/dl/getContent/335253
Intel® Ethernet 300 Series	N/A
Intel® Ethernet 200 Series	N/A

6.2 Specification Update

These documents provide the latest information on hardware errata as well as device marking information, SKU information, etc.

Device Series	Support Link
Intel® Ethernet 800 Series	https://cdrdv2.intel.com/v1/dl/getContent/616943
Intel® Ethernet 700 Series: — X710/XXV710/XL710 — X710-TM4/AT2 and V710-AT2	 https://cdrdv2.intel.com/v1/dl/getContent/331430 https://cdrdv2.intel.com/v1/dl/getContent/615119
Intel® Ethernet 500 Series — X550 — X540	 https://cdrdv2.intel.com/v1/dl/getContent/333717 https://cdrdv2.intel.com/v1/dl/getContent/515715
Intel® Ethernet 300 Series	https://cdrdv2.intel.com/v1/dl/getContent/333066
Intel® Ethernet 200 Series — I210 — I211	 https://cdrdv2.intel.com/v1/dl/getContent/332763 https://cdrdv2.intel.com/v1/dl/getContent/333015

6.3 Software Download Package

The release software download package can be found at:

https://www.intel.com/content/www/us/en/support/products/36773/network-and-i-o/ethernet-products.html

6.4 Intel Product Security Center Advisories

Intel product security center advisories can be found at:

https://www.intel.com/content/www/us/en/security-center/default.html



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