Intel® Ethernet Controller Products

Release Notes for Software Release 25.4

Intel Corporation

Revision History

Revision	Date	Comments
1.0	September 2020	• Initial release (Intel Public).

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

Note: **Bold Text** indicates the main changes for Software Release 25.4.

Controller Family	Windows* Driver Version	Linux* Driver Version	FreeBSD Driver Version	NVM Version
Intel® Ethernet 800 Series	**1.4.38.x**	**1.1.x**	**0.26.x**	**2.1x**
Intel® Ethernet 700 Series Intel® Ethernet Network Connection X722	**25.4**	**2.13.x**	**1.12.x**	**8.1 N/A**
Intel® Ethernet 500 Series Intel® Ethernet Controller X550	**4.1.219.x**	**5.9.x**	**3.3.x**	**N/A 3.1**
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 225 Series	1.01.x	N/A	N/A	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 a specific network device as well as 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
• 25.4	• No new hardware introduced in this release.

1.2.2   Software Features

Release	New Software Support
• 25.4	• Support for FreeBSD 11.4.

1.2.3 Removed Features

Release	Hardware/Feature Support
• 25.4	• Removed DOS tools.

1.2.4 Firmware Features

| Release	New Firmware Support
• 25.4	• No new firmware introduced in this release.

2.0 Fixed Issues

2.1 Intel® Ethernet 800 Series

2.1.1 Firmware

- **Fixed:** Reading the module temperature sensor with NVM 2.10/2.12 gives an incorrect value for all methods that rely on firmware, including NCSI and PLDM. Users can expect reported temperature ranges from 0 to 255 with no consistency. QSFP modules with a temperature sensor whose module EEPROMs are aligned to specification SFF-8636, Revision 2.8 or newer could result in port shutdown that is only recoverable with a power cycle and a change of module.

2.2 Intel® Ethernet 700 Series

2.2.1 General

- **Fixed:** The Intel® Ethernet Network Adapter X710-T2L/T4L and the Intel® Ethernet Network Adapter X710-2/X710-4 pull-up in GLOBR creates a false FAN_ON_AUX.

- **Fixed:** Device returns different version of supported PLDM type 6.

- **Fixed:** Devices do not return Network Port schema data.

- **Fixed:** The FAN_ON_AUX signal doesn't change status when temperature crosses warning threshold.

- **Fixed:** Intel® Ethernet Converged Network Adapter XL710-Q1/Q2 recovery fails on FreeBSD.

- **Fixed:** RDE device reports wrong MaxFrameSize value.

- **Fixed:** PCIeDevice PDR (recordHandle 4003) is missing in the list of retrieved PDRs.

- **Fixed:** RdeOperationInit on NetworkPort1 returns SUCCESS and didn't return BEJ.

- **Fixed:** For the Intel® Ethernet Controller X710-TM4/AT2, setting the Link NCSI command to 2.5G/5G speed doesn't change the link properly.

- **Fixed:** The NCSI Get Temperature command might try to read temperature from a module that doesn't support temperature readings. This could lead to incorrect temperature handling as well as having an impact for handling platform events.
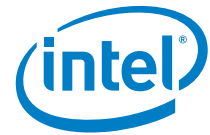
2.2.2   Windows Driver

- **Fixed:** 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.

2.2.3   Linux Driver

- **Fixed:** MAC VLAN filters are not freed when the number of VFs changes. It is observed only when a limit of MAC VLAN filters have been reached before VF changes.
- **Fixed:** When the number of multicast MAC addresses configured on the VF reaches the limit of the network adapter, the VF cannot receive all multicast packets.
- **Fixed:** 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.
- **Fixed:** Packets with assigned VLAN are not redirected to the correct queue set by the Intel® Flow Director (FD) rule.
- **Fixed:** After setting DCB on Intel® Ethernet Controller X710 adapters, traffic is not tagged with a priority tag.
- **Fixed:** 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.
- **Fixed:** Promiscuous mode trusted VF with VLAN port for unicast packets receiving additional Tx traffic of every other VFs assigned to the same PF.

2.2.4   NVM Update Tool

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

2.2.5   ProSet

- **Fixed:** Use Default button in the UI is missing from the **Locally Administered Address** tab.

2.3   Intel® Ethernet 500 Series

2.3.1   General

- **Fixed:** FAN 7 rotates non-stop when 562FLR is installed and while in AUX power.
- **Fixed:** 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 is observed only when using the ESX-ixgben driver. **Fixed:** Firmware installation failed for 562FLR-T.

2.4   Intel® Ethernet 300 Series

2.4.1   Windows Driver

- **Fixed:** The Wake on LAN (WoL) feature doesn't work on the Intel® Ethernet Server Adapter I350 and Intel® Ethernet Network Adapter I350 OCP 3.0. This issue occurs on ports 2 through 4.

2.5   Intel® Ethernet 200 Series

None for this release.

3.0   Known Issues

3.1   Intel® Ethernet 800 Series

3.1.1   General

- Some devices support auto-negotiation. Selecting this causes the device to advertise the value stored in its NVM (usually disabled).

- If the PF has no link then a Linux VM previously using a VF will not be able to pass traffic to other VMs without the patch found here:

  https://lore.kernel.org/netdev/
  BL0PR2101MB093051C80B1625AAE3728551CA4A0@BL0PR2101MB0930.namprd21.prod.outlook.c
  om/T/#m63c0a1ab3c9cd28be724ac00665df6a82061097d

  This patch routes packets to the virtual interface.

  Note: This is a permanent 3rd party issue. No expected action on Intel's part.

- VXLAN switch creation on Windows Server 2019 Hyper V might fail.

- 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, users 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.

- Currently, installing SLES distros via PXE boot is not supported on Intel® Ethernet Controller E810-XXVAM2 devices. This limitation will be resolved in a future software release.

- On certain platforms, the legacy PXE option ROM boot option menu entries from the same device are pre-pended with identical port number information (first part of the string that comes from BIOS).

  This is not an option ROM issue. The first device option ROM initialized on a platform exposes all boot options for the device, which is misinterpreted by BIOS.

  The second part of the string from the option ROM indicates the correct slot (port) numbers.

- When having link issues (including no link) at link speeds faster than 10 Gb/s, check the switch configuration and/or specifications. Many optical connections and direct attach cables require RS-FEC for connection speeds faster than 10 Gb/s. One of the following might resolve the issue:

  Configure the switch to use RS-FEC mode.

  — Specify a 10 Gb/s, or slower, link speed connection.

  — If attempting to connect at 25 Gb/s, try using an SFP28 CA-S or CS-N direct attach cable. These cables do not require RS-FEC.

— If the switch does not support RS-FEC mode, check with the switch vendor for the availability of a software or firmware upgrade.

3.1.2   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. Refer to *Link Aggregation is Mutually Exclusive with SR-IOV and RDMA* in the ICE driver README.

- 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 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.

- 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.

- 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.

- On some server platforms running RHEL 7.8, there might be a call trace seen on the Intel IOMMU driver when the MTU is changed. A reboot of the system might be required in order to recover.

- 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.

- Intel's `iavf` driver in a Linux guest/virtual machine might occasionally experience driver crash/call trace during an install or uninstall on Windows Server 2016.

- Windows Server 2019 powershell command Get-IntelNetAdapterStatus -Status Virtualization -Name *e810* might result in an error message *The remote procedure call failed* when Linux virtual machine(s) are running.

  — When using `iproute2` commands or `ethtool` operations immediately after loading the module, there might be a race condition that might cause undefined behavior with the driver.

— **Workaround:** Allow approximately five seconds after module load and before issuing `iproute2` or `ethtool` operations. The NetworkManager configuration might need to be updated to ignore ICE interfaces.

3.1.3   Windows Driver

• When changing the Locally Administered Address the Intel® Ethernet Controller 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 Intel® Ethernet Controller E810 might not report the link is down after running Powershell or DMIX. This issue can be resolved by disabling and then enabling the Windows driver.

• If changing the DCB map on the link partner while RDMA is enabled, it might cause a reset on the device.

3.1.4   Windows RDMA Driver

• The Intel® Ethernet Network Adapter E810 might experience an adapter-wide reset (all ports) when the DCBx willing configuration change (in firmware managed mode) propagated from the switch removes a TC that was RDMA enabled. This typically occurs when removing a TC associated with UP0 because it's the default UP that RDMA based it's configuration on. The reset results in a temporary loss in connectivity as the adapter re-initializes.

• 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.
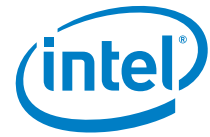
3.1.5 Linux RDMA Driver

- When using Intel MPI in Linux, Intel recommends to enable only one interface on the 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 the adapter except for the one used for MPI. OpenMPI does not have this limitation.

- When connecting multiple rping clients to a persistent rping server, older kernels might experience a crash related to the handling of `cm_id` values in the kernel stack. With Intel® Ethernet Controller E810, this problem typically appears in the system log as a kernel oops and stack trace pointing to `irdma_accept`. The issue has been fixed in kernels 5.4.61 and later. For more detail, see: https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git/commit/drivers/infiniband/core/ucma.c?h=v5.9-rc2&id=7c11910783a1ea17e88777552ef146cace607b3c

3.1.6 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.

- 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.

3.1.7 FreeBSD Driver

- The FreeBSD ICE driver might show the wrong media type (25GBASE-AOC) for 25G-LR/SR optics when the advertise_speed parameter is set to 164 (1G+10G+25G).

3.1.8 Manageability

- 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.

- The bandwidth/throughput might vary across different VFs if VF rate limiting is not applied.

  Workaround: To avoid this situation it is recommended to apply VF rate limiting.

- Occasionally, when a QSFP/ SFP+ module is inserted, PLDM PDR's are not created and a sensor is not accessible. If this occurs, unplug the module and try again. This has been observed only with a slow removal/insertion of the module.

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, users 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.

- Some `odata.id` properties are wrong.

3.2.1.1 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.

3.2.2 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.

- When two VF interfaces are in balance-tlb bonding mode, the ICMP traffic might be interrupted for a few sequences.

- For the XDP redirect feature upon using the ethtool -L combined [N] option in a few cases, the traffic being received on the Tx side is almost half of the packets received on the Rx side. There is no corresponding packet drop happening upon checking netstat.

- For Precision Time Protocol (PTP), there is no synchronization when SMA1 (GPIO_4) is input for the 1PPS signal.

- With DCB enabled on Intel® Ethernet Controller X710 or Intel® Ethernet Controller X722 designs, when dynamically switching LLDP/DCBX from firmware to software ownership using the ethtool --set-priv-flags ethX disable-fw-lldp on command, an issue results in dmesg error messages and incorrect DCB configuration. Possible workarounds:

  a. Reload Linux driver.

     and/or

  b. Shut down and re-enable the switch port connected to the affected adapter port.

3.2.3 PROSet

- 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.

- VLAN status might be presented as Link Down in the **Teaming/VLANs tab** whereas the status is Enabled in the Windows Device Manager.

3.2.4 EFI Driver

- In the BIOS Controller Name as part of the Controller Handle section, a device path appears instead of an Intel adapter branding name.

3.3 Intel® Ethernet 500 Series

- In the BIOS Controller Name as part of the Controller Handle section, a device path appears instead of an Intel adapter branding name.
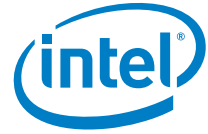
3.4 Intel® Ethernet 300 Series

- In the BIOS Controller Name as part of the Controller Handle section, a device path appears instead of an Intel adapter branding name.

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: This only applies to Microsoft Windows and Windows Server Operating Systems.

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

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

6.0 Related Documents

Contact your Intel representative for technical support about Intel® Ethernet Series devices/adapters.
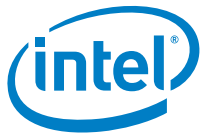
6.1   Feature Support Matrix

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 Updates

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:

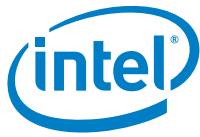https://www.intel.com/content/www/us/en/support/products/36773/network-and-i-o/ethernet-products.html

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
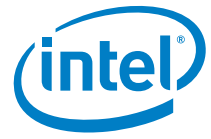
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