



Intel[®] Ethernet Controller Products

29.3.1 Release Notes

August 2024

Revision 1.6
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Revision History

Revision	Date	Comments
1.6	August 2024	<ul style="list-style-type: none">Introducing New OS support: Ubuntu 24.04 LTS
1.5	August 2024	<ul style="list-style-type: none">Generic update for FVL, CVL and CPK NIC OEM and FreeBSD 14.1
1.4	July 2024	<ul style="list-style-type: none">Introducing New OS support: SLES 15 SP6
1.3	July 2024	<ul style="list-style-type: none">Introducing New OS support: VMware ESXi 8.0u3
1.2	June 2024	<ul style="list-style-type: none">Introducing New OS Support: Red Hat Enterprise Linux 9.4 and Red Hat Enterprise Linux 8.10
1.0	May 2024	<ul style="list-style-type: none">Dot release, ESXi drivers update.

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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 New Features

1.1.1 Hardware Support

Release	New Hardware Support
29.3.1	<ul style="list-style-type: none">None for this release

1.1.2 Software Features

Release	New Software Support
29.3.1	<ul style="list-style-type: none">New OS support: Ubuntu 24.04

1.1.3 Firmware Features

Release	New Firmware Support
29.3.1	<ul style="list-style-type: none">None for this release

1.2 Removed Features

Release	Hardware/Feature Support
29.3.1	<ul style="list-style-type: none">None for this release

1.3 Operating Systems Supported

1.3.1 Linux*

Operating Systems supported:

- Linux Real Time Kernel 5.x and 4.x (only on Intel Ethernet E810 Series)
- Linux, v2.4 kernel or higher
- Red Hat* Enterprise Linux* (RHEL) 9.4
- Red Hat Enterprise Linux 8.10
- SUSE Linux Enterprise Server 15 SP6
- SUSE Linux Enterprise Server 12 SP5
- Canonical Ubuntu 24.04 LTS
- Canonical* Ubuntu* 22.04 LTS
- Debian* 11
- openEuler

Table 1. Supported Operating Systems: Linux

Product	PF Driver	VF Driver	RDMA Driver
Intel® Ethernet 810/820 Series	1.15.4	4.12.5	1.15.11
Intel® Ethernet 700 Series	2.26.8	4.12.5	1.15.11
Intel® Ethernet 10 Gigabit Adapters	5.21.5	4.20.5	Not Supported
Intel® Ethernet Gigabit Adapters	5.17.4	Not Supported	Not Supported

1.4 Windows Server

Operating Systems supported:

- Microsoft Windows Server 2022
- Microsoft Windows Server 2019, Version 1903
- Microsoft Windows Server 2016
- Microsoft Azure Stack HCI

Table 2. Supported Operating Systems: Windows Server

Driver	Windows Server 2022	Windows Server 2019	Windows Server 2016
Intel® Ethernet 800 Series			
icea	1.15.121.0	1.15.121.0	1.14.104.0
scea	1.14.222.0	1.14.222.0	Not Supported
Intel® Ethernet 700 Series			
i40ea	1.19.164.0	1.19.164.0	1.18.369.0
i40eb	1.19.166.0	1.19.166.0	1.18.369.0
Intel® Ethernet Adaptive Virtual Function			
iavf	1.14.203.0	1.14.203.0	1.14.203.0
v40e	Not Supported	Not Supported	Not Supported
Intel® Ethernet 10 Gigabit Adapters and Connections			
ixs	4.1.254.0	4.1.254.0	4.1.254.0
sxa	4.1.254.0	4.1.254.0	4.1.254.0
sxb	4.1.254.0	4.1.254.0	4.1.254.0
ixt	Not Supported	4.1.228.0	4.1.229.0
ixn	Not Supported	4.1.254.0	4.1.254.0
ixe	Not Supported	Not Supported	Not Supported
vxs	2.1.252.0	2.1.252.0	2.1.232.0
vxn	Not Supported	2.1.252.0	2.1.252.0
Intel® Ethernet 2.5 Gigabit Adapters and Connections			
e2f	1.1.4.43	1.1.4.43	Not Supported
Intel® Ethernet Gigabit Adapters and Connections			
e1r	14.0.5.0	14.0.5.0	14.0.6.0
v1q	Not Supported	1.4.7.3	1.4.7.3

1.4.1 Windows Client

Operating Systems Supported:

- Microsoft Windows 11 23H2
- Microsoft Windows 11 22H2
- Microsoft Windows 10 21H2
- Microsoft Windows 10 RS5, Version 1809

Table 3. Supported Operating Systems: Windows Client

Driver	Windows 11	Windows 10 21H2 / Windows 10 RS5
Intel® Ethernet 800 Series		
icea	1.15.121.0	1.15.121.0
Intel® Ethernet 700 Series		
i40ea	1.19.164.0	1.19.164.0
Intel® Ethernet Adaptive Virtual Function		
iavf	1.14.203.0	1.14.203.0
Intel® Ethernet 10 Gigabit Adapters and Connections		
ixs	4.1.254.0	4.1.254.0
ixt	Not Supported	4.1.228.0
ixn	Not Supported	4.1.254.0
vxs	2.1.252.0	2.1.252.0
vxn	Not Supported	2.1.252.0
Intel® Ethernet 2.5 Gigabit Adapters and Connections		
e2fn	2.1.4.3	1.1.4.43
Intel® Ethernet Gigabit Adapters and Connections		
e1r	14.0.5.0	14.0.5.0
e1d	12.19.2.60	21H2: 12.19.2.60 RS5: 12.18.9.10
e1c	Not Supported	Not Supported
v1q	Not Supported	1.4.7.3

1.4.2 FreeBSD

Operating Systems supported:

- FreeBSD 14.1
- FreeBSD 13.3

Table 4. Supported Operating Systems: FreeBSD

Driver	PF Driver	VF Driver	RDMA Driver
Intel® Ethernet 810/820 Series	1.41.10	3.0.33	1.3.9
Intel® Ethernet 700 Series	1.14.2	3.0.33	1.3.9
Intel® Ethernet 10 Gigabit Adapters	3.3.38	1.5.38	Not Supported
Intel® Ethernet Gigabit Adapters	2.5.31	Not Supported	Not Supported

1.4.3 ESXi Drivers

Note: Intel® ESXi drivers are available from VMware.

- VMWare ESXi 8.0
- VMware ESXi 7.0

Refer to VMWare's download site for the latest ESXi drivers for Intel® Ethernet® devices.

1.5 NVM Versions Supported

The following table shows the NVM versions supported in this release.

Table 5. Current NVM

Product	NVM Version
810 Series	
E810	4.60
820 Series	
E822	3.39
E823-C	3.39
E823-L	3.39
700 Series	
X710	9.52
X722	6.50
500 Series	
X550	3.60
X552NS	2.10
X552DE	2.10
X553	2.10
200 Series	
I210	2.00

1.6 DDP Versions Supported

The following table shows the versions supported in this release.

Table 6. Current DDP

Package	DDP Version
OS Package	1.3.36.0
Comms Package	1.3.46.0
Wireless Edge Package	1.3.14.0

2.0 Fixed Issues

2.1 Intel® Ethernet 800 Series Network Adapters

2.1.1 Intel® Ethernet 810 Series

2.1.1.1 General

- Fixed probing VF driver on ARM systems.
- Empire Flats (E810CQDA20CPV3G and L) MultiPort power class limits to 3.5W should only be present in CVL4.4, the fix increasing the limit back to 4.5W was taken in all CVL4.5 and later builds. The module's power requirements exceed the device's power supply.

2.1.1.2 Firmware/NVM/NVM Update

- RAMON specific workaround implemented in DreadnoughtLake scripts in case of caui4 no FEC links, was modified being applied only when outer phy is RAMON (and not Parkvale).
- The NetworkDeviceFunction.MTUSize property is changed to reflect the current OS defaults before the user configures specific value.
- Fixed a rare timing issue of nc-si oem command: plug-out optics and plug-in again, BMC can NOT get temperature by reason code 0x5089.
- Removed the need for EMPR after temperature fatal threshold is exceeded.
- When link goes down, recovered clock switches to an incorrect frequency, and the external DPLL shifts the system timing.
- FW incorrectly mapped NC-SI channels to Physical ports when responding to the Intel OEM NC-SI command 0x26 (no other command affected).
- Unsupported SMBus write command caused HW to trigger improperly handled FW behavior, which blocked subsequent SMBus writes other than MCTP.
- If user configured 1G and needs to go back to 10G, not able to do so.
- Fixed PTP Time Error to be under 5 ns when running PTP in Boundary Mode between PF with PKVL PHY and PF w/o PKVL PHY.

2.1.1.3 Linux

- Celo process may not be ended or killed while exiting application. As the result current console is non responsive. Stability of the system is not endangered and user can start next console session.
- Fixed adding VF to namespace and setting it to up status producing an error in dmesg, VF now works normally.

2.1.2 Fixed null pointer dereference when quickly switching DPDK and creating a filter. Intel® Ethernet 700 Series Network Adapters

2.1.2.1 Firmware/NVM/NVM Update

- PATCH request with request to change FlowControlConfiguration property returns success, but do not really apply changes.
- LLDP receive property preserves the last received data, even when LLDP traffic doesn't contain the TLV item/data.

- NetworkDeviceFunction schema Ethernet. The MACAddress property is not updated to the value in PATCH JSON. This is a regression. The issue is under investigation.
- PATCH request with request to to change FlowControlConfiguration property returns success, but do not really apply changes. The issue is under investigation.
- Fixed an issue where X710DA2 cannot get SFF temperature when another port is empty.

2.1.2.2 ESX Driver

- Multicast packets sent from VF are not visible on vmkernel interface connected to the first NIC port in ENS mode. The problem results in packet drop only on vmkernel interface (packets are not seen). This does not affect vf-vf traffic, and this is only an issue when sending multicast packets from VM to vmkernel.
- When SR-IOV is enabled and VMDQ Loopback is disabled packets between VF-PF and VF-VMXNET3 can be dropped by the hardware when non-default RX queue is used for PF or VMXNet3, so VF-PF and VF-VMXNET3 traffic is disallowed for this configuration.

3.0 Known Issues

3.1 Intel® Ethernet 800 Series Network Adapters

3.1.1 Intel® Ethernet 810 Series

3.1.1.1 General

- DPDK traffic is stopped after FLR reset. This issue has been documented in the **rte_eth_dev_reset** API.
Workaround: **testpmd** can be used to recover a VF after a reset.
 - When a VF reset happens, **testpmd** will print out "port reset" event to the console.
 - Use the "port reset" command to call **rte_eth_dev_reset**, and everything will go back to normal
- Running Unreliable Datagram (UD) RDMA mixed traffic with more than 2 QPs may lead to a receiver side UD application hang.
Workaround: Restart the RDMA UD application. This is not expected to impact storage (NVMeoF, iSER, VSAN) applications since they do not rely on UD communication.

- **3.1.1.2** Due to third party tool limitations, DxSetup could fail if the installer source path contains characters not supported by the currently enabled OS language.
Workaround: DxSetup will now detect, return an error and fail the install, if characters used in the installer source path are unsupported by the currently enabled OS language. **Firmware/NVM/NVM Update**

- RDE: Setting property (AutoSpeedNegotiationEnabled.) not causing property value update.
- When updating "ChassisIdSubtype" with the payload of "FlowControlConfiguration", the "ChassisIdSubtype" won't be updated with the annotation message of "PropertyNotUpdated".
- Occasionally, modified RDE settings are not applied after reboot/PCIR.
- The NVMUpdate tool cannot properly recognize devices which are installed on PCI segment different than 0 when running under efi shell.

3.1.1.3 Linux

- CGU state handler continuously fails to receive CGU state from FW after NVM update.
Workaround: Driver can be reloaded.
- The Intel SIOV does not work on RHEL, due to backports applied by Red Hat.
- DPDK traffic is stopped after FLR reset. This issue has been documented in the `rte_eth_dev_reset` API.

Workaround: `testpmd` can be used to recover a VF after a reset.

- When a VF reset happens, `testpmd` will print out "port reset" event to the console.
- Use the "port reset" command to call `rte_eth_dev_reset`, and everything will go back to normal.
- During TC configuration, using the "`ethtool -S <vf_interface>`" command results in a crash due to invalid memory access during reconfiguration of queues.
- In FreeBSD-13.0, iavf virtual interfaces guests may experience poor receive performance during stress.
- Changing the inner or outer VLAN tag protocols after setting the private flag "vf-true-promisc-support" disables the promiscuity on the VF's VLAN interfaces.
- When trust is enabled on VF with more than 8 VLAN filters, disabling trust makes all VLAN filters non functional.
- When Firmware is operating in mode when LLDP is ON, the DCB-MAP is not reflecting as configured in both switch and back to back.

Workaround: The workaround for this behavior is to do the power cycle of the setup to see the assigned DCB-MAP is reflecting.

- Triggering 2 or more VF resets in immediate succession across many VF's may cause unstable behavior of the ice driver if the VF's in question have different numbers of allocated queues. This also applies to commands that can trigger VF resets internally such as setting MAC address, trust value, port VLANs or LUT settings.

Workaround: Adding small delay between reset-triggering commands.

- When user sets more than 8 VLANs for trusted VF, and then moves VF as untrusted, the VLAN configuration will be lost.

Workaround: To avoid losing VLAN configuration, user shall first reduce VLANs configuration allowed for untrusted VF (not more than 8 VLANs per VF), and then switched the VF to untrusted mode.

- On SLES15SP6 it is possible that the kernel will release the second interface from a bond immediately upon adding it. This is the result of a kernel issue.

3.1.1.4 FreeBSD Driver

- During traffic in RoCEv2 mode, using large number of QPs (>64), a PE Critical Error may occur. In such circumstances the card may become inoperational, and reboot is required to restore RDMA capability.
- iavf virtual interfaces in FreeBSD-13.0 guests may experience a poor receive performance during stress.

3.1.1.5 RDMA Driver

- None for this release.

3.1.1.6 VMware Driver

- None for this release.

3.1.1.7 Windows Driver

- When Large Send Offload (LSO) V2 is enabled, the network adapter is unable to transmit frames larger than the MTU, which can impact network performance. Additionally, the incorrect incrementing of checksums `OID_INTEL_OFFLOAD_LARGE_SEND_VXLAN_COUNT` may lead to inaccurate network statistics.

Workaround: Users can temporarily disable Large Send Offload V2 on their network adapters to allow the transmission of frames larger than the MTU. However, note that this workaround may impact other aspects of network performance. We recommend using this workaround only if absolutely necessary and awaiting the software update for a comprehensive solution.

3.1.1.8 ESX Driver

- Running Unreliable Datagram (UD) RDMA mixed traffic with more than 2 QPs may lead to a receiver side UD application hang.

Workaround: Restart the RDMA UD application. This is not expected to impact storage (NVMeoF, iSER, VSAN) applications since they do not rely on UD communication.

- VMWARE - When instantiating the maximum number of VFs in NSX-T, adding a Transport Node afterwards might fail due to timeout.

3.1.1.9 VMWARE - Using Native Mode and ENS Mode ICEN driver with the latest DDP can cause queue configuration issues. **Application Device Queues (ADQ)**

3.1.1.10 Pre-Boot

- It is expected that after modifying port options the user is not able to apply any additional configuration changes before the platform is rebooted. Due the error in the driver no warning messages are displayed and the user is able to perform additional changes that can lead to incorrect card configuration.

3.1.2 Intel® Ethernet 820 Series

3.1.2.1 General

- None for this release.

3.1.2.2 Firmware/NVM/NVM Update

- As the issue is not properly isolated yet all we can say is:

In combination with some specific VF-PF drivers timestamp may not work at all on Intel® Ethernet 820 Series devices.

- The 100 MB option, is visible in Windows* Device Manager. However, when it is selected, a link cannot be established.

- There is a limitation that the NVM update tool doesn't allow the user to program PHY FW on Quad 1.
- Using the EPCT tool to change port configuration requires 2 reboots to complete the programming process. Blank mode or PTP initialization failures may be observed after a single reboot and will be resolved after performing a second reboot.
- Allow I2C multiple byte write access for PHY control (device address 0xAC).
- Disable Optical Module Laser when Link/Port is disabled.

3.1.2.3 Linux Driver

- None for this release.

3.1.2.4 FreeBSD Driver

- None for this release.

3.1.2.5 Windows Driver

- None for this release.

3.1.2.6 VMware Driver

- None for this release.

3.2 Intel® Ethernet 700 Series Network Adapters

3.2.1 Windows Driver

- None for this release.

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

- None in this release.

3.2.3 Linux Driver

- In some cases `./nvmupdate64e` can't initialize the XL710 card in recovery mode.

```
Intel® Ethernet NVM Update Tool
NVMUpdate version 1.41.3.1
Copyright © 2013 - 2024 Intel Corporation.
```

```
Config file read.
```

```
Warning: Cannot initialize port: [00:059:00:00] Intel® Ethernet Converged Network
Adapter XL710-Q2
```

```
Warning: Cannot initialize port: [00:059:00:01] Intel® Ethernet Controller XL710
Generic ID
```

3.2.4 Pre-Boot

- The blink LED test executed from the UEFI setup menu may not work correctly for 10G speed when the link is up for the given port.

3.2.5 VMware Driver

- None for this release.

3.2.6 Firmware/NVM/NVM Update

- When sending PLDM GetTerminusUID command, the last six bytes of TerminusUID are all zero. It should be same as MCTP UUID, indicating the MAC address. Issue under investigation.
- Regression of an issue where POST to the "NetworkAdapter.ResetSettingsToDefault" looked successful from postman, but after reboot the adapter's Port 1 LLDP setting did not reset to default.
- 40G QSFP modules from Intel can not support NC-SI OEM command 0x4b02 to query temperature with reason code 0x5089. fixed in NVM V9.3 of XL71.
- NVM content corrupted after nvupdate. The bug affects users only at the time when they try to update NVM, and only Firmware versions that generate errors while nvupdate such as X710DA2 with 0x8000ECB7.

In the log instead of:

```
i40e_nvupdate_exec_aq_err I40E_ERR_ADMIN_QUEUE_ERROR aq_err I40E_AQ_RC_ENOMEM)
```

Output:

```
i40e_nvupdate_exec_aq_err -EIO aq_err I40E_AQ_RC_ENOMEM  
i40e: eeprom check failed (-5), Tx/Rx traffic disabled
```

- RDE ConnectionDropped/ConnectionEstablished annotation message are not reported. Incorrectly reported version for NC-SI over MCTP - reports 1.0.1 and 1.1.0 instead of correct 1.0.0 and 1.1.0.
- After patch RDE AutoSpeedNegotiationEnabled property the value will maintain current value.

3.3 Intel® Ethernet 500 Series Network Adapters

- Intermittent Traffic Delivery Failure on SLES 15 SP5/SP6 with VF Connected to SW Bridge: an issue has been identified in SLES 15 SP5/SP6 where network traffic from a Virtual Function (VF) connected to a software bridge (SW bridge) may intermittently fail to reach the intended client. This problem is impacting the reliability of network communications in virtualized environments utilizing software bridges.
Result: traffic from vf connected to SW bridge sometimes may not reach a client.

3.4 Legacy Devices

- None for this release.

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

Refer to the Feature Support Matrix (FSM) links listed in [Feature Support Matrix](#) 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 following languages:

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: – E810 – E820 Intel® Ethernet Controller E810 and Intel® Ethernet Connection E82X Feature Comparison Matrix	https://cdrdv2.intel.com/v1/dl/getContent/630155 https://cdrdv2.intel.com/v1/dl/getContent/739764 https://cdrdv2.intel.com/v1/dl/getContent/751546
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

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/334566
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 [here](#).

6.4 SourceForge Ethernet Drivers and Utilities

For additional information regarding Linux kernel drivers, refer to the [Intel® Ethernet Drivers and Utilities](#) SourceForge project page.

6.5 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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