Networking Division
Technical Advisory

2111 N.E. 25th Avenue
Hillsboro, OR 97124-5961

TA-234

Potential Packet Data Issue with Intel® Ethernet 700 Series Running Microsoft Windows* Operating Systems

Description

A packet data pointer issue might occur when using Intel® Ethernet 700 Series products with certain Intel Ethernet device drivers on Microsoft Windows operating systems that are using *Jumbo Frames* and *Receive Side Coalescing* features together.

The issue might lead to a data mismatch between what came in off wire (Rx port) from remote sender and what is transferred up the OS/system stack to receiver (i.e. application). While most applications apply their own additional forms of data integrity checking, there may exist some that do not and thus could be exposed to potential data integrity issues.

Note: By default, the Jumbo Frames feature is disabled (off) in Intel Windows drivers.

Cause

Certain Microsoft Windows device drivers for Intel® Ethernet 700 Series products do not correctly calculate Memory Descriptor List (MDL) payload pointers while coalescing Rx packets larger than 2084 bytes (i.e., Jumbo Frames).

Products Affected

This technical advisory affects the following Intel® Ethernet 700 Series products using affected Intel Ethernet device drivers with any firmware/NVM version:

- Intel® Ethernet Controllers X710/XL710/XXV710 and all products based on these controllers.
- Intel® C620 Series Chipset with Intel® Ethernet Connection X722.
- Intel® Xeon® Processor D-2100 Product Family.

Operating Systems Affected

Affected operating systems are:

- Microsoft Windows Server 2012*
- Microsoft Windows Server 2012 R2*
- Microsoft Windows Server 2016*
- Microsoft Windows Server 2016 Nano Server*

Driver Versions Affected

Affected Intel Ethernet drivers for Microsoft Windows are:

- v1.8.94.0
- v1.8.94.2
- v1.8.102.0
- v1.8.103.0
- v1.8.103.1
- v1.8.103.2
- v1.8.109.0

Affected drivers are contained in the following driver packs:

- Intel® Ethernet Adapter Driver Pack 23.2
- Intel® Ethernet Adapter Driver Pack 23.1

Note: No other OS or driver versions are affected.

Resolution

This issue is resolved with drivers included in Software Release 23.4, which can be download via the following links:

- Intel® Ethernet Adapter Complete Driver Pack
- Intel® Network Adapter Driver for Windows Server 2012*
- Intel® Network Adapter Driver for Windows Server 2012 R2*
- Intel® Network Adapter Driver for Windows Server 2016*

Intel recommends updating to Software Release 23.4 as soon as possible. However, if updating to Software Release 23.4 is not convenient at this time, a workaround exists as described in the Mitigation section below.

Note: Microsoft ended support for Windows Server 2016 Nano Server in the Spring of 2018. As a result, support for Windows Server 2016 Nano Server was removed in Intel Software Release 23.4. Customers on Windows Server 2016 Nano Server can use drivers available in Intel Software Release 22.10, which do not exhibit the issues described in this Technical Advisory. Use the following link to download Software Release 22.10:

Intel® Network Adapter Driver for Windows Server 2016 Nano Server*

Mitigation

For the customer who chooses not to update to one of the newly-released drivers referenced above, they can mitigate the issue by the following alternative solution:

The issue arises when both the Jumbo Frames feature and Receive Side Coalescing feature are enabled. Disabling either feature eliminates the possibility of encountering this issue.

Note: By default in all Intel drivers, the Jumbo Frames feature is disabled and the Receive Side Coalescing feature is enabled.

Customers who have Jumbo Frames enabled (and need to continue to pass them) are strongly advised to turn off the Receive Side Coalescing feature as soon as possible, as follows:

Disable Receive Side Coalescing from the **Advanced** tab in the Windows Device Manager, or via the Windows PowerShell* command prompt.

Note: Customers are advised that processing of jumbo traffic with Receive Side Coalescing disabled might result in increased CPU utilization.

Customers who have Jumbo Frames enabled (and have no need to pass them) are strongly advised to turn off the Jumbo Frames feature as soon as possible, as follows:

Disable Jumbo Frame from the **Advanced** tab in the Windows Device Manager, or via the Windows PowerShell command prompt.

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