Windows* Release Notes

Intel® QuickAssist Technology

Hardware Version 2.0

Production Release

August 2024

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Intel® QuickAssist for Windows* Release Notes

Package Version: W.2.2.0-0018

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Table 1:: Revision History

Document Number	Revision Number	Description	Revision Date
758459	009c	Intel® QuickAssist Software release W.2.2.0-0018 • Updated Supported Operating Systems • Added Validated Software Versions • Updated Known and Resolved Issues	August 2024
758459	009b	Intel® QuickAssist Software release W.2.2.0-0015 • Fixed release notes revision number • Updated Xeon® 6 branding • Updated Known and Resolved Issues	May 2024
758459	009a	Intel® QuickAssist Software release W.2.2.0-0012 • Updated Limitations Section • Updated Known and Resolved Issues	March 2024

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Document Number	Revision Number	Description	Revision Date
758459	009	Intel® QuickAssist Software release W.2.1.0-0031 • Updated Limitations Section • Updated Known and Resolved Issues	January 2024
758459	008	Intel® QuickAssist Software release W.2.1.0-0025 • Updated Supported HW Platforms • Updated Limitations Section • Updated Known and Resolved Issues • Removed installation and sample application sections	October 2023
758459	007	Intel® QuickAssist Software release W.2.0.5-0014 • Updated Known and Resolved Issues	August 2023
758459	006	Intel® QuickAssist Software release W.2.0.4-0008 • Updated Limitations Section • Updated Known and Resolved Issues	May 2023
758459	005	Intel® QuickAssist Software release W.2.0.4-0004 • Updated Limitations Section • Updated Known and Resolved Issues	February 2023
758459	004	Intel® QuickAssist Software release W.2.0.3-0004 • Added What's New • Updated Data Compression services • Updated Limitations Section • Updated Known and Resolved Issues	January 2023
758459	003	Intel® QuickAssist Software release W.2.0.1-0016 Initial Production Release	November 2022
N/A	002	Prodution Candidate Release	September 2022
N/A	001	Initial EAR Release	July 2022

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RELEASE DESCRIPTION

This document contains information on the accompanying Intel® QuickAssist Technology (Intel® QAT) Windows* Software Production Release W.2.2.0-0018. This document also describes extensions and deviations from the release functionality described in *Reference Documents*, Intel® QuickAssist Technology Software for Linux* Software Programmer's Guide for the various platforms that support Intel® QAT.

Note: These release notes may include known issues with third-party or reference platform components that affect the operation of the software.

For more detailed technical information about the Windows* QAT driver package, please see the "Intel® QuickAssist Technology Software for Windows* - Technical Guide" in *Reference Documents*.

Note: The "Intel® QuickAssist Technology Software for Windows* - Technical Guide" may be updated following a public Windows* QAT driver release.

1.1 Supported Hardware Platforms

The software in this release has been validated against the following devices:

- Intel® Xeon® 6 Processor with Intel® QAT Gen4 in 1-Socket and 2-Socket configurations.

Note: Intel® Xeon® 6 Processor with Intel® QAT Gen4 in configurations above 4-Socket are not validated.

1.2 Supported Operating Systems

1.2.1 Supported Host Operating Systems

Below are the currently validated Bare-Metal/Host Operating Systems supported for this release.

Table 1.1:: Validated Host Operating Systems

Host Operating System	Intel® 402xx Accelerator
Windows* Server 2019	No
Windows* Server 2022	Yes
Windows* Server 2025	Yes
Windows* 10 Enterprise 21H2	SW ISA-L/MS SQL Restore
Windows* 11 Enterprise 21H2	SW ISA-L/MS SQL Restore

Note: Windows 10 and Windows 11 Enterprise has only been validated for software ISA-L support specifically for Microsoft* SQL software restore from QAT hardware or ISA-L software backup.

1.2.2 Supported Guest Operating Systems

Below are the currently validated Guest Operating Systems supported with this release for SR-IOV using the QAT Accelerator Virtual Function(s).

Table 1.2:: Validated Guest Operating Systems

Guest Operating System	Intel® 402xx Accelerator
Windows* Server 2019	Full QAT HW/SW Support
Windows* Server 2022	Full QAT HW/SW Support
Windows* Server 2025	Full QAT HW/SW Support
Ubuntu* 20.04 LTS, Kernel 5.4	Full QAT HW/SW Support
Ubuntu* 22.04 LTS, Kernel 5.15	Full QAT HW/SW Support

Important: Other Host/Guest Operating System combinations may work but has not been validated by Intel®.

1.3 Validated Software Versions

The following table lists the software versions that have been validated against this Intel® QAT Release package.

Table 1.3:: Validated Software Versions

Software Name	Package Version	Description
Async-Mode Nginx*	0.5.1	SR-IOV QAT-Engine SW Fallback with Nginx*
Intel® ISA-L	2.32	Windows* QAT Compression SW Fallback
Intel® Linux* QAT Drivers	QAT20.L.1.2.30-00014	QAT Linux* HW 2.0 Driver for SR-IOV
Intel® QAT Engine	v1.4.0	SR-IOV QAT-Engine SW Fallback
OpenSSL*	3.0.11	SR-IOV QAT-Engine SW Fallback
Windows* Server 2019	KB5036896	Windows* Cumulative Updates to April 2024
Windows* Server 2022	KB5036909	Windows* Cumulative Updates to April 2024
Windows* Server 2025	kb5040435	Windows* Cumulative Updates to July 2024

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1.4 Package Version

The following table shows the OS-specific package versions for each platform supported in this release.

Table 1.4:: Package Version

Chipset or SoC	Package Version	SHA256 Checksum
Top-Level Package	QAT.2.0. W.2.2.0-0018.zip	2BE1E4956BB6B5A209CFD853F91E30A8 E8E194DDFA212B17607DDEA8CE297C04

Important: Please verify the SHA256 checksum of the driver package to prevent use of repackaged Intel® drivers.

Note: This software release has passed the Windows* Hardware Lab Kit (HLK*) Certification and contains certified device drivers.

1.5 What's New

- Added support for Windows Server 2025.
- Added security hardening to be in-line with W.2.3.0 release.
- Resolved QAT20-34797 and QAT20-35293.

Table 1.5:: Intel® Software Release Feature History

Release History	New Features
Release W.2.2.0-0015	• Resolved QAT20-34854
Release W.2.2.0-0012	• Added support for Intel® Xeon® 6 Processors with Intel® QAT.
Release W.2.1.0-0031	• Added security hardening. • Removed support for symmetric crypto via Windows* CNG framework. Please use Release W.2.1.0-0025 if hardware symmetric crypto via Windows* CNG framework is required or use the software option.

Table 1.5 – continued from previous page

Release History	New Features
Release W.2.1.0-0025	• Added support for Intel® Fifth Generation Server Processors with Intel® QAT. • Added support for QAT device and slice level information for perfmon counters. • Added new features to QATzip API; programmable CRC64, Zstd compression via LZ4S post- processing, and LZ4 SW fallback. • Added support for Rate Limiting on per virtual function basis for compression and crypto. • Added support for Linux Guest VF compression fallback via QATzip API.
Release W.2.0.5-0014	• Changed QzMetadataBlob_T in metadata API calls to use struct instead of pointer to struct. • Added new return codes (QZ_NOSW_NO_HW and QZ_NOSW_NO_INST_ATTACH) to qzCompressWithMetadataExt. • Greatly improved PKE Crypto performance in Windows Guest in Windows* Hyper-V by when using using the default 'asym;dc' mode. • Security updates to the crypto and compression services.
Release W.2.0.4-0008	• Security updates to the crypto and compression services • Fixed icp_qat4.inf in the unpacked archive • Minor defect fixes.
Release W.2.0.4-0004	• Added support for Intel® Xeon® 4th-Generation Scalable Processor with Intel® QAT QatGen4m for Bare-Metal and virtualization using SR-IOV. • Minor defect fixes.
Release W.2.0.3-0004	• Added support for Intel® Xeon® Scalable Processor with Intel® QAT QatGen4m for Bare-Metal • Added LZ4 metadata support via QATzip API with qzCompressWithMetadataExt • Installer security hardening
Release W.2.0.1-0016	• Initial production release that supports Intel® QAT Gen4

1.6 Data Compression Services

This software package provides the following Data Compression services:

- Static and Dynamic Deflate Stateless compression/decompression

- Stateless LZ4 compression with separate metadata

- Includes sample code application for compression services - parcomp

For ISA-L integration, the source code and information to build the DLL can be found in the Intel® Intelligent Storage Application Library GitHub. However, due to certification requirements, Intel recommends only using the ISA-L DLL included in the Windows QAT driver package.

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The QATZip file includes (and may not be limited to) the following compression and decompression functions. For more information, see the Windows* QAT Technical Guide.

- qzAllocateMetadata

- qzClose

- qzCompressCrc64/Crc64Ext/Ext

- qzCompressWithMetadataExt

- qzDecompress/Crc64/Crc64Ext/Ext

- qzFree

- qzFreeMetadata

- qzGetDefaults/Deflate/LZ4/LZ4S

- qzGetSoftwareComponentCount

- qzGetSoftwareComponentVersionList

- qzGetStatus

- qzInit

- qzMalloc

- qzMaxCompressedLength

- qzMetadataBlockRead

- qzMetadataBlockWrite

- qzSetDefault

- qzSetupSession/Deflate/LZ4/LZ4S

- qzTeardownSession

1.7 Cryptography Services

This software package also provides the following cryptography services.

Support for PKE cryptography services include:

- Cryptography API: Next-Generation (CNG) support, sometimes referred to as the "BCrypt API." Refer to Cryptography API: Next-Generation, in *Reference Documents*.

- An Intel® QuickAssist CNG provider is registered to support the following PKE algorithms in user mode:

  - Rivest-Shamir-Adleman (RSA) with key lengths (2048, 3072, 4096, 8192 bit)

  - Elliptic Curve Digital Signature Algorithm (ECDSA) (nistP256/P384/P521)

  - Elliptic-curve Diffie-Hellman ECDH (nistP256/P384/P521 and Curve25519)

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1.8 List of Files in this Release

The Bill of Materials (BOM) is included as a text file in the released software package. This text file is labeled "filelist" and located at the top directory level for each release package.

1.9 Reference Documents

Async Mode for Nginx

GZIP File Format Specifications RFC1952

Intel® Intelligent Storage Acceleration Library

Intel® QuickAssist Technology API Programmer's Guide

Intel® QuickAssist Technology OpenSSL* Engine

Intel® QuickAssist Technology QATzip

Intel® QuickAssist Technology Software for Linux* Drivers (Hardware Version 1.7)

Intel® QuickAssist Technology Software for Linux* Getting Started Guide (Hardware Version 1.7)

Intel® QuickAssist Technology Software for Linux* Release Notes (Hardware Version 1.7)

Intel® QuickAssist Technology Software for Windows* - Technical Guide

Microsoft* Cryptography API Next Generation

Microsoft* DevCon GitHub

Microsoft* PowerShell GitHub

OpenSSL Cryptography and SSL/TLS Toolkit

1.10 Terminology

ADF
Acceleration Driver Framework.

AEAD
Authenticated Encryption With Associated Data.

AES
Advanced Encryption Standard.

API
Application Programming Interface.

ASIC
Application Specific Integrated Circuit.

ASYM
Asymmetric Cryptography Service.

BDF
Bus Device Function.

BIOS
Basic Input/Output System.

BSD
Berkeley Software Distribution.

CBC
Cipher Block Chaining mode.

CCM
Counter with CBC-MAC mode.

CIR
Committed Information Rate.

CLI
Command Line Interface.

CnV
Compress and Verify.

CnVnR
Compress and Verify and Recover.

C-States
C-States are advanced CPU current lowering technologies.

CY
ASYM and SYM Cryptography Services.

DC
Data Compression Service.

DID
Device ID.

DMA
Direct Memory Access.

DRAM
Dynamic Random Access Memory.

DSA
Digital Signature Algorithm.

DTLS
Datagram Transport Layer Security.

ECC
Elliptic Curve Cryptography.

ECDH
Elliptic Curve Diffie-Hellman.

FLR
Function Level Reset.

FW
Firmware.

GCM
Galois/Counter Mode.

GPL
General Public License.

GUI

Graphical User Interface.

HMAC

Hash-based Message Authentication Mode.

IA

Intel® Architecture.

IEEE

Institute of Electrical and Electronics Engineers.

IKE

Internet Key Exchange.

Intel® ISA-L

Intel® Intelligent Storage Acceleration Library. This includes an optimized library for fast software Deflate compression and decmopression.

Intel® QAT

Intel® QuickAssist Technology.

Intel® SpeedStep® Technology

Advanced means of enabling very high performance while also meeting the power-conservation needs of mobile systems.

Intel® VT

Intel® Virtualization Technology.

IOCTL

Input Output Control function.

IOMMU

Input-Output Memory Management Unit.

LAC

LookAside Crypto.

Latency

The time between the submission of an operation via the QuickAssist API and the completion of that operation.

MSI

Message Signaled Interrupts.

NUMA

Non-uniform Memory Access.

Offload Cost

This refers to the cost, in CPU cycles, of driving the hardware accelerator. This cost includes the cost of submitting an operation via the Intel® QuickAssist API and the cost of processing responses from the hardware.

OS

Operating System.

PCH

Platform Controller Hub. In this manual, a Platform Controller Hub device includes standard interfaces and Intel® QAT Endpoint and I/O interfaces.

PCI

Peripheral Component Interconnect.

PIR

Peak Information Rate.

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PF
> Physical Function.

PKE
> Public Key Encryption.

PowerShell
> Cross-platform command-line shell and scripting language using the .NET Common Runtime.

QP
> Queue-Pair.

RAS
> Reliability, Availability, Serviceability.

RSA
> Rivest-Shamir-Adleman.

SAL
> Service Access Layer.

SGL
> Scatter-Gather List.

SHA
> Secure Hash Algorithm.

SLA
> Service Level Agreements.

sIOV
> Intel® Scalable I/O Virtualization

SoC
> System-on-a-Chip.

SR-IOV
> Single-Root Input/Output Virtualization.

SSL
> Secure Sockets Layer.

SYM
> Symmetric Crypto Service.

TCG
> Trusted Computing Group.

Throughput
> The accelerator throughput usually expressed in terms of either requests per second or bytes per second.

TLS
> Transport Layer Security.

TPM
> Trusted Platform Module.

UDP
> User Datagram Protocol.

USDM
> User Space DMA-able Memory.

VF

Virtual Function.

VHD

Virtual Hard Disk, VHD(x) is the successor file format.

VM

Virtual Machine.

WDK

Windows* Driver Kit

WPP

Windows* Software Trace Pre-processor

LIMITATIONS, KNOWN ISSUES AND RESOLVED ISSUES

This section provides the all known limitations and known issues for this Windows* software release. For detailed information on features/limitations, please refer to the README.txt file inside the software package (./QuickAssist/README.txt).

2.1 Limitations

This release does not support the following:

- Mismatching of different QAT SKU's on the same platform

- QAT device pass-through to Guests in Hyper-V

- Public Key Encryption in kernel mode

- Symmetric cryptography via via Windows* CNG framework

- LZ4 decompression with metadata

- Zstd decompression via LZ4S post-processing

- Compression and hash/cryptography chaining functionality

- Software Fallback for PKE in SR-IOV mode

- Dynamic and static Deflate Stateful compression/decompression

2.2 Known Issues

The known issues with this software release are listed below:

Title	System instability with failover when disabling all QAT devices and using ECDH stress operations
Reference	QAT20-35471
Description	When using the CNGTest application with multi-threaded ECDH stress tests, it has been observed that disabling all QAT devices concurrently may lead to system instability.
Resolution	Avoid disabling QAT devices while multi-threaded, stressful ECDH tests are on-going.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Crypto

Title	Cngtest does not validate fallback operations are working correctly
Reference	QATE-38968
Description	Currently, Cngtest does not include tests to validate the fallback to the Microsoft* provider works for unsupported algorithms and curves. Cngtest cannot validate fallback operations. If encryption is performed by SW, it needs to ensure that decryption can be performed by the Intel® QAT HW or vice-versa.
Resolution	There is currently no workaround for this, and it may be added in a future release.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Crypto

Title	Parcomp unable to read > 1GB file for compression
Reference	QATE-40170
Description	Parcomp is unable to read large files (test file was 2.2 GB) for compression. Thus, compression would fail.
Resolution	When writing an application with QATZIP, chunk the file into at most 1GB increments.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Compression

Title	Repeatedly referencing invalid memory in SR-IOV enabled Guest may lead to Guest instability.
Reference	QATE-81175
Description	When repeatedly referencing invalid memory in a stressful manner for hours in a guest with Intel® QAT VF's, it may lead to system instability and a guest OS crash.
Resolution	Updating the Hyper-V host and Windows* guest to the latest cumulative updates greatly reduces the risk of this happening to negligible levels.
Affected OS	Windows* Server 2022 with Hyper-V using Windows* Guests
Driver/Module	QAT IA - Compression

Title	Full device pass through to guest Operating System is not supported for Hyper-V
Reference	QATE-96364
Description	It is not possible to provide Intel(R) QAT Physical Function (PF) to a guest OS for Hyper-V host. During the QAT driver's initialization, a Functional Level Reset (FLR) is required. The hypervisor traps FLRs issue by guest OSs which prevents the QAT driver from initializing the PFs that are passed into the VM.
Resolution	Provide Virtual Functions (VFs) to guest Operating System. Refer to Intel® QuickAssist Technology Software for Windows* - Technical Guide (doc number 648260) for additional details on exposing QAT VFs and providing to guest OS.
Affected OS	Windows* Server 2019/2022 with Hyper-V using Windows* Guests
Driver/Module	QAT IA - Base Driver

Title	Linux VF remove/add stress fails in 1vm64vf configuration, some VFs left in bad state
Reference	QAT20-21454
Description	When repeatedly executing remove/add on Linux VM with 64 VFs assigned will sometimes fail with some VFs in a bad state. These VFs do not appear in lspci in the VM but they ARE listed as an assigned device from the Windows host perspective.
Resolution	Reboot the Guest
Affected OS	Windows* Server 2022 with Hyper-V using Ubuntu Guests
Driver/Module	QAT IA - Base Driver

Title	Kernel DMA protection enabled in BIOS may cause driver crash
Reference	QAT20-25348
Description	On certain platforms that have Kernel DMA protection enabled in the BIOS, this will cause the QAT driver to behave unstably and may result in a system crash.
Resolution	Disable Kernel DMA protection in the BIOS.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Compression

Title	System instability when disabling driver after hardware failure
Reference	QAT20-31963
Description	Attempting to disable multiple QAT devices seconds after a QAT hardware failure (Windows Event ID 96) with in-flight compression and/or crypto operations may result in system instability.
Resolution	None; Should wait until in-flight operations are flushed before attempting a device disable (which is approximately 60 seconds).
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022
Driver/Module	QAT IA - Base Driver

Title	Unable to guarantee compression rate limiting on Windows Server 2019 Guests
Reference	QAT20-31979
Description	Compression and Decompression Rate Limiting is not guaranteed for Windows Server 2019 Guests.
Resolution	None; This appears to be an OS limitation.
Affected OS	Windows* Hyper-V 2022 using Windows* Server 2019 Guests
Driver/Module	QAT IA - Base Driver

Title	Single offload decompress fails if using different request size from compression
Reference	QAT20-33240
Description	When using the parcomp compression sample application to decompress a file compressed with single offload, a mismatched request size results decompress failure.
Resolution	Use the same request size for compress and decompress.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Compression

Title	Parcomp decompression fails on large compressed buffer with qatgzip level 9 and single offload
Reference	QAT20-33700
Description	When using the parcomp sample application to decompress a large buffer (~1 GiB) compressed using qatgzip with compression level 9 and single offload (-c 0), user may observe a failure to decompress.
Resolution	Use QAT with chunksize (e.g., -c 64) or break down the large request into smaller requests.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022
Driver/Module	QAT IA - Compression

Title	DPC_WATCHDOG_VIOLATION observed when executing PKE stress with driver disable
Reference	QAT20-35471
Description	A DPC_WATCHDOG_VIOLATION crash may be observed When doing stressful PKE operations (e.g., executing ECDH with cngtest) and enabling and disabling multiple QAT device drivers in short succession.
Resolution	Avoid bringing multiple QAT device drive down in quick succession on a stressful PKE workload.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Crypto

Title	Windows* Server 2025 Preview has vf2pf comm failures with Linux* Guests using SR-IOV
Reference	QAT20-36250
Description	When attempting to use SR-IOV mode with QAT VF's on a Windows* Server 2025 Preview Hyper-V host with Linux* Guests, the user will observe vf2pf comm failures.
Resolution	Windows* Server 2025 Preview has an issue that prevents Intel® QAT from functioning in a Linux* Guest using SR-IOV mode.
Affected OS	Windows* Hyper-V 2022 using Linux* Guests
Driver/Module	QAT IA - Base Driver

Title	ASYM throughput is exceeding the SLA units on QatGen4m
Reference	QAT20-36335
Description	The rate limiting SLA for ASYM on QatGen4m may be exceeding the expected encrypt and decrypt throughput.
Resolution	None
Affected OS	Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Base Driver

Title	Freeing In-flight Memory may Result in qzTeardownSession failure and ISA-L Exception
Reference	QAT20-36731
Description	When attempting to free memory that is being used for compression or decompression operations may result in being unable to successfully call qzTeardownSession and an ISA-L exception (should sw_backup = 1).
Resolution	It is best practice to not free memory while the same memory is being actively used. If software failover is not desired, the sw_backup can be set to 0 in the QzSessionParams_T struct to prevent the ISA-L exception.
Affected OS	Not OS Specific
Driver/Module	QAT IA - Compression

Title	Compiling using the static qatzip library may result in a linking error
Reference	QAT20-36860
Description	Compiling using the libqatzip.lib results in a linking error (e.g., '/Zc: nrvo').
Resolution	To accomodate Windows Server 2025 support, any application using the static library libqatzip.lib now requires Visual Studio 2022 to compile properly.
Affected OS	Windows* Server 2022/2025 and Windows* Hyper-V 2022/2025 using Windows* Guests
Driver/Module	QAT IA - Compression

Title	Cfqat service may be unable to stop if kernel mode service using QATzip is running
Reference	QAT20-37172
Description	A kernel mode service using QATzip may cause cfqat to be unable to stop and instead be in the STOP_PENDING state on service stop or driver uninstall. This happens if the handle to the QAT service has not been freed.
Resolution	A full uninstall of the QAT driver package requires a system reboot.
Affected OS	Windows* Server 2022/2025 and Windows* Hyper-V 2022/2025 using Windows* Guests
Driver/Module	QAT IA - Base Driver

2.3 Resolved Issues

The resolved issues with this software release are listed below:

Title	The isa-l.dll is not being installed for Windows Server Core editions.
Reference	QATE-84471
Description	When installing the Windows QAT driver package on Windows Server Core editions, the isa-l.dll is not installed. The QAT installation summary erroneously attributes this to the lack of the NuGet binary.
Resolution	User can manually unpack and copy the isa-l.dll into the Windows system32 directory.Reboot the Guest.
Affected OS	Windows* Server 2016/2019/2022 Core Edition
Driver/Module	QAT IA - Installer

Title	Not all devices recover from heartbeat failure in Linux VF SW fallback heartbeat test in 1vm64vf configuration.
Reference	QAT20-20783
Description	After running Linux VF software fallback heartbeat test in 1vm 64vm configuration, observed least one device not resetting. In the Nginx logs in /opt, the RESTARTING/RESTARTED messages are mismatched, where there are always 128 RESTARTING messages but less than 128 RESTARTED messages. In Dmesg, among the "Function level reset, resetting device" messages after a heartbeat failure, at least one "Device is still in use, can't be stopped" message is seen.
Resolution	Reboot the Guest.
Affected OS	Windows* Server 2022 with Hyper-V using Ubuntu Guests
Driver/Module	QAT IA - Base Driver

Title	Cpmprov service is not running by default
Reference	QAT20-21152
Description	After installing the QAT20 driver package, the cpmprov service is configured or running by default.
Resolution	Use sc.exe to create and start the cpmprov service.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Installer

Title	Performing driver upgrade may sometimes see DRIVER_VERIFIER_DMA_VIOLATION
Reference	QAT20-21314
Description	When doing a PF driver upgrade with stressful multi-threaded compression in the Windows Guest, we sometimes see a DRIVER_VERIFIER_DMA_VIOLATION.
Resolution	Restart the system.
Affected OS	Windows* Server 2022 with Hyper-V with Windows Guest
Driver/Module	QAT IA - Base Driver

Title	Changing ServicesNeeded to 'asym;sym' may cause KERNEL_SECURITY_CHECK_FAILURE
Reference	QAT20-21396
Description	When repeatedly setting ServicesNeeded to asym;sym and start/stopping cpmprov service (or some combination thereof), we observe KERNEL_SECURITY_CHECK_FAILURE.
Resolution	Do not set 'Asym;sym' mode.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Base Driver

Title	PKE does not work when ServicesEnabled set to 'asym;sym' mode
Reference	QAT20-21416
Description	When setting ServicesNeeded on all qat20dev to asym;sym, PKE operations no longer work in HW.
Resolution	Do not set 'Asym;sym' mode.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Base Driver

Title	Decompression error counters observed
Reference	QAT20-21564
Description	Observing decompression error counters increment when doing decompression. Note decompress completes successfully and the checksum matches against the original file.
Resolution	None.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Compression

Title	QAT counters not loaded by default in WS2019 Guest
Reference	QAT20-22862
Description	When using command line or GUI for the target platform's first QAT driver install, the QAT counters are not loaded by default.
Resolution	Manually add the counters
Affected OS	Windows* Server 2022 with Hyper-V using Windows* Server 2019 Guests
Driver/Module	QAT IA - Base Driver

Title	QATzip Single Offload behaves inconsistently
Reference	QAT20-22944
Description	When attempting to use single offload compression with Windows QATzip (e.g., using a request and chunk size greater than 1016KB), the operation may fail. This is a current QAT limitation using default page sizes that limits the contiguous memory allocation for a single request. In Windows* Server 2022, it is approximately 8MB; on older Windows* Server, it is limited to approximately 1016KB.
Resolution	Limit the request size when doing single offload.
Affected OS	Windows* Server 2022 and Windows* Server 2022 with Hyper-V using Windows* Guests
Driver/Module	QAT IA - Compression

Title	Cngtest displays -1 number of devices in Windows Guest
Reference	QAT20-22976
Description	When attempting to use cngtest, the output for the number of [QAT] Devices is -1, which is inaccurate
Resolution	Do not use the Device count number in this situation.
Affected OS	Windows* Server 2022 with Hyper-V using Windows* Guests
Driver/Module	QAT IA - Crypto

Title	Single offload compression with 512K request fails on silesia
Reference	QAT20-24514
Description	When using attempting single offload compression on silesia corpus file with 512K request, user may observe a return code of QZ_FAIL. This happens only with QZ_STATIC_HDR (static) mode.
Resolution	1. Use QZ_DYNAMIC_HDR (dynamic) mode. 2. Use chunking or increase the request size.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Crypto

Title	Crypto example file Perf_User.bat has deprecated algorithms
Reference	QAT20-24572
Description	The Perf_User.bat located in ..\Crypto\Samples\bin has deprecated algos as part of the examples.
Resolution	Remove the DH and DSA entries.
Affected OS Title	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows Guest
Driver/Module	QAT IA - Crypto

Title	Cngtest Negative Ops output observed on certain params
Reference	QAT20-24585
Description	When using certain crypto algorithms in cngtest (e.g., RSA 8192 key length decrypt), sometimes negative Operations/sec (Ops) may be observed. This occurs with high iteration (numIter) counts.
Resolution	Use shorter iteration count.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Crypto

Title	Changing Crypto ServicesNeeded requires cpmprov and/or cpmprovuser restart.
Reference	QAT20-25739
Description	When changing the ServicesNeeded registry key, the new ServicesNeeded value may not be fully set until the cpmprov and/or cpmprovuser services have been restarted. This may cause system instability, especially in PnP scenarios. This does not apply to the QAT VF device, as the ServicesNeeded is only affected at the QAT PF level.
Resolution	After changing ServicesNeeded, restart the affected QAT devices, and then restart the cpmprov and/or cpmprovuser services.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Crypto

Title	HyperVMode is possible with QatGen4m
Reference	QAT20-25912
Description	For the QAT Windows installer, QatSetup.exe, the QatGen4m has the ability to install with HyperVMode. However, QatGen4m does not support virtualization.
Resolution	Reinstall the driver in Standalone mode as QatGen4m has no functionality in HyperVMode.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022
Driver/Module	QAT IA - Installer

Title	QatGen4m PKE performance under expectations
Reference	QAT20-25914
Description	The QatGen4m PKE performance e.g., RSA with key size of 2048 bits, may be lower than the equivalent when compared to the Linux* QAT driver.
Resolution	No mitigation until next release.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Crypto

Title	Xeon® 4th-Generation in 4-Socket and above configurations, some QAT devices may not load
Reference	QAT20-26576
Description	When installing QAT driver package on Xeon® 4th- Generation in 4-Socket and above configurations, some QAT devices may not load correctly. This may be accompanied by a system reboot required message from device manager.
Resolution	Restarting the system may mitigate or resolve the issue. The online QAT devices should work correctly, but note that 4-Socket and above configuration have not been officially validated.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Base Driver

Title	Changing ServicesNeeded may cause Linux Guest kernel panic when using adf_ctl to change config
Reference	QAT20-26664
Description	Linux guest kernel panic may be seen after changing the Windows host PF ServicesNeeded and then changing Linux Guest VF config file with adf_ctl in short succession.
Resolution	After changing the ServicesNeeded registry key, restart the system if the intended use case is to use QAT VF's in SR-IOV mode.
Affected OS	Windows* Server 2022 with Hyper-V using Ubuntu Guests
Driver/Module	QAT IA - Base Driver

Title	QAT cannot initialize without enough resources
Reference	QAT20-28142
Description	When there are not enough interrupt resources for the QAT devices, the QAT devices may not initialize and the compression and crypto services will fail. This may typically be seen on CPU SKU's with very low core counts.
Resolution	Disable other devices on the system (such as network adapters)
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Base Driver

Title	Rate Limiting Data Compression throughput reduced for PIR = 40000/CIR = 1
Reference	QAT20-28472
Description	In a configuration of 1vm/1vf, setting the rate limiting policy for Data Compression with CIR = 1 and PIR = 40000 will reduce throughput to around 22000 Mbps.
Resolution	Do not set CIR value.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Base Driver

Title	Rate Limiting cannot accurately apply rate limiting policy to decompression
Reference	QAT20-28668
Description	Rate limiting is unable to properly limit decompress flow due to the amount of SLAU available. There is 40000 max SLAU for the DC service, which is based on max compress throughput. Since max decompress throughput approximately double compress throughput, there is not enough SLAU to limit decompress completely.
Resolution	Setting CIR/PIR values to half the intended values for decompression, up to the maximum SLAU.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Base Driver

Title	Unpacked icp_qat4.inf does not match QatSetup icp_qat4.inf
Reference	QAT20-28804
Description	The archive unpacked icp_qat4.inf does not match the icp_qat4.inf from IntelQat.msi. This is due to CRLF issue.
Resolution	Extract the icp_qat4.inf from QatSetup.exe to use for PnP driver install or imaging.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Installer

Title	Observing excessive parcomp decompression run times
Reference	QAT20-30861
Description	With certain parcomp decompression parameters, and depending on the QAT platform used, observe excessive application execution time.
Resolution	None, can cancel the operation.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Base Driver

Title	Parcomp compression may timeout after hardware failure
Reference	QAT20-33260
Description	A hardware failure or heartbeat timeout may cause the sample application to timeout if there are in-flight compression and/or decompression operations.
Resolution	None.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022
Driver/Module	QAT IA - Compression

Title	LZ4S mini match value is not honored
Reference	QAT20-34797
Description	When setting the lz4s_mini_match parameter in the QzSessionParamsLZ4S_T struct, the value is not set. Only the default value is used.
Resolution	Use the default value.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Compression

Title	System instability with failover when disabling all QAT devices with LZ4 stress
Reference	QAT20-34854
Description	When using QATzip application (e.g., parcomp) with multi-threaded LZ4 compress/decompress stress with SW failover enabled, it has been observed that disabling all QAT devices concurrently may lead to system instability.
Resolution	Avoid disabling QAT devices while multi-threaded, stressful LZ4 traffic is on-going. Another option is to disable SW failover.
Affected OS	Windows* Server 2022
Driver/Module	QAT IA - Compression

Title	qzMaxCompressedLength returns 0 if hw_buff_sz is QZ_HW_BUFF_MAX_SZ_Gen3
Reference	QAT20-35293
Description	When using the qzMaxCompressedLength API with a hw_buff_sz value of QZ_HW_BUFF_MAX_SZ_Gen3, the return value is 0.
Resolution	Find an alternative method of calculated the compressed buffer or use a smaller hw_buff_sz value.
Affected OS	Windows* Server 2022 and Windows* Hyper-V 2022 using Windows* Guests
Driver/Module	QAT IA - Compression