Windows Release Notes

Intel® QuickAssist Technology

Hardware Version 1.7/1.8

Production Release

June 2023

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Intel® QuickAssist for Windows* Release Notes

Package Version: W.1.11.0-0006

Table 1:: Revision History

Document Number	Revision Number	Description	Revision Date
337758	012	Intel® QuickAssist Software release W.1.11.0-0006 • Updated Section 1.2 Supported OS's • Updated Section 1.4.1 What's New • Updated Section 2.2 Known Issues	June 2023
337758	011	Intel® QuickAssist Software release W.1.10.0-0005 • Updated Section 1.2 Supported OS's • Updated Section 1.4.1 What's New • Updated Section 2.2 Known Issues	March 2023
337758	010	Intel® QuickAssist Software release W.1.9.0-0008 • Updated Section 1.2 Supported OS's • Updated Section 1.4.1 What's New • Updated Section 2.2 Known Issues • Updated Section 2.2 Resolved Issues	October 2022

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Document Number	Revision Number	Description	Revision Date
337758	009	Intel® QuickAssist Software release W.1.8.0-0010 • Updated Section 1.4.1 What's New • Updated Section 1.5 Data Compression Services • Updated Section 1.6 Cryptography Services	June 2022
337758	008	Intel® QuickAssist Software release W.1.7.0-0009 • Updated Section 1.2 Supported Operating Systems • Updated Section 1.4.1 What's New • Updated Section 2.2 Known Issues • Updated Section 2.3 Resolved Issues	March 2022
337758	007	Intel® QuickAssist Software release W.1.6.0-0009 • Updated Section 1.2 Supported Operating Systems • Updated Table 1. Validated Bare-Metal/Host Operating Systems Supported for this Release • Updated Table 2. Validated Guest Operating Systems Supported for this Release • Updated Section 1.4.1 What's New • Updated Table 3. Intel® QAT Software Release Feature History • Updated Section 1.6 Cryptography Services • Updated Section 2.3 Resolved Issues	November 2021
337758	006	Intel® QuickAssist Software release W.1.6.0-0004 • Updated Section 1.1 Supported Platforms	August 2021
337758	005	Intel® QuickAssist Software release 1.5.0-0007 • Updated Section 1.2 Supported OS	June 2021
337758	004	Intel® QuickAssist Software release 1.4.0-0007 • Updated Section 1.2 Supported OS • Add support for Intel® Atom® C3000 with Intel® QAT	March 2021
337758	003	Intel® QuickAssist Software release 1.3.0-0009 • Added Section 1.3.1 What's New • Added Section 1.3.2 Software Release History • Updated Section 2.2 Known Issues • Updated Section 2.3 Resolved Issues	April 2020
337758	002	Intel® QuickAssist Software release v1.1.0-29 • Removed Support for Windows* Server 2012 R2 • Updated Section 2.2 Known Issues • Updated Section 1.1 Supported Platforms	March 2019

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Document Number	Revision Number	Description	Revision Date
337758	001	• Initial release	June 2018

CHAPTER

ONE

RELEASE DESCRIPTION

This document contains information on the accompanying Intel® QuickAssist Technology (Intel® QAT) Windows* Software Release W.1.11.0-0006. 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.

1.1 Supported Hardware Platforms

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

- Intel® QuickAssist Adapter 8960 and 8970 (C62x)
- Intel® Xeon® Scalable Platform with Intel® C62x Chipset (with Intel® QAT)
- Intel® Atom® C3000 series with Intel® QAT C3xxx
- Intel® Xeon® D-2100 series Platform with Intel® C62x Chipset (with Intel® QAT)
- Intel® Xeon® D-2700 series with Intel® QAT C4xxx

Note: Intel® QAT supports Intel® Xeon® Scalable first, second, and third generation platforms.

Note: The Xeon® D-2700 series with Intel® QAT C4xxx was validated using the Switch Mode SKU.

Important: The only validated Intel® QuickAssist add-in cards are genuine Intel® QuickAssist Adapter 8960 and 8970.

1.2 Supported Operating Systems

The software in this release has been validated against the following Operating Systems (OS):

Table 1.1:: Validated Host Operating Systems

Host Operating System	Intel® QAT C62x	Intel® QAT C3xxx	Intel® QAT C4xxx
Windows* Server 2016	Yes	No	No
Windows* Server 2019	Yes	No	Yes
Windows* Server 2022	Yes	No	Yes
Windows* 10 Enterprise LTSC	No	Yes	No

Below are the currently validated Guest Operating Systems supported with this driver release as a Physical Function (PF) driver for SR-IOV.

Table 1.2:: Validated Guest Operating Systems

Guest Operating System	Intel® C62X | Virtual Function	Intel® C4xxx | Virtual Function
Windows* Server 2016	Full QAT HW/SW Support	No
Windows* Server 2019	Full QAT HW/SW Support	No
Windows* Server 2022	Full QAT HW/SW Support	No
Windows* 10 Enterprise 21H2	SW ISA-L / MS SQL Restore only	No
Windows* 11 Enterprise 21H2	SW ISA-L / MS SQL Restore only	No
Ubuntu* 18.04 LTS, Kernel 4.15	Full QAT HW/SW Support	QAT HW/SW Support, No SW Failover
Ubuntu* 20.04 LTS, Kernel 5.4	Full QAT HW/SW Support	QAT HW/SW Support, No SW Failover

Note: The Linux* VF driver was validated using Intel® QAT Linux* driver package L4.22.0-00001.

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.

Note: Intel® recommends updating Windows* to the latest Cumulative Update.

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

1.3 Package Version

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

Table 1.3:: Package Version

Chipset or SoC	Package Version	SHA256 Checksum
Top-Level Package	QAT1.x. W.1.11.0-0006.zip	5E7E4A686547062D0CAA6739ADEB946C A24071D7BCFA1C440EBF4351EC40E3C0

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.

1.4 What's New

- Improved IOCTL security for the base driver, compression, and/or crypto services.
- Added support for QAT1.8 (QatGen 3) devices for SR-IOV virtualization using Linux Guests.

Table 1.4:: Intel® Software Release Feature History

Release History	New Features
Release W.1.10.0-0005	• Improved IOCTL security for the base driver, compression, and/or crypto services. • Added support for QAT1.8 (QatGen 3) devices in bare-metal compression only configuration. • Updated to new generation of QATzip API to be in line with QatGen 4.
Release W.1.9.0-0008	• Improved IOCTL security for the base driver, compression, and/or crypto services. • Changed QAT driver package software only installation to display warning graphic instead of an error graphic.
Release W.1.8.0-0010	• Updated QAT installer to install Intel® ISA-L regardless of whether nuget.exe is present. • Added QATzip API version querying. • Added QATzip API ability to force software even if QAT hardware is present. • Improved WPP trace categorization. • Removal of QAT hardware support for legacy and/or deprecated cryptographical algorithms. This includes but may not be limited to: DH, DSA, RSA Key Lengths under 2048 bit, and non-NIST ECC-Curves under 256-bit length (with the exclusion of curve25519).
Release W.1.7.0-0009	• Added Windows* SR-IOV Compression Software Fallback and Servicing support. • Added support for Windows* Server 2016, 2022 in the Guest. • Added a QAT installation summary of the QAT components that have been installed. For QAT components that have not been installed, a reason is given why. • Added Event Log in the event of a QAT hardware issue. • Added scalable multi-session and multi-threaded functionality to Windows* QATzip.

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Release History	New Features
Release W.1.6.0-0009	• This release is intended to replace Intel® QAT Windows* driver W.1.6.0-0004. This release adds Intel® ISA-L installation in addition to qatzip.dll in the installation case where Intel® QAT hardware is not present on the system or virtual machine. Previously, Intel® ISA-L would only install if the Intel® QAT hardware was present. • Added uninstall option in the case of installing the Intel® QAT Windows* driver package without Intel® QAT hardware.
Release W.1.6.0-0004	• Added Windows* Virtual Function support for Windows* Server 2019 for Intel® QAT 8970/C62x devices • Added Intel® ISA-L as part of the Windows* QAT driver package. This is available in Standalone Mode • Added support for qzCompressExt and qzDecompressExt. This allows the end user access to extended return codes (e.g., to determine if SW or HW was used during the compress/decompress call) • Added support to install QAT software (qatzip.dll) on systems without QAT hardware • Removed support for Kernel Mode PKE
Release W.1.5.0-0007	• Added Windows* Host Virtualization support via SR-IOV. Currently, only Linux* QAT VFs are supported • Added installation modes. Standalone is the same as previous drivers; it will install the QAT base driver, compression, and crypto service. Hyper-V mode will only install the QAT base driver in SR-IOV mode. This requires a system reboot. Do not use Hyper-V mode if compression or crypto services are needed on the Host partition • Added Software Fallback for the Windows* PF driver to support Linux* Guests with the QAT Linux* VF using QAT Engine Applications • Added QATzip support for the systems without QAT hardware and services. All deflate compression operations will take the software path using ISA-L if software fallback is specified
Release W.1.4.0-0007	• Added support for Intel® Atom® C3000 with Intel® QAT • Updated Windows* QATzip to use standard QATzip header file • Added support for the gzip and gzipext data format • Added support of ISA-L SW Fallback for gzip and gzipext data formats
Release W.1.3.0-0009	• Software fallback in the event of hardware failure for cryptography and compression services • Improved error handling with the Intel® QuickAssist cryptography and compression services

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Release History	New Features
Release W.1.2.0-0018	• Intel® Intelligent Storage Acceleration Library (ISA-L) integration with Intel® QuickAssist compression and decompression services. • Compression fallback support with ISA-L • Improved error handling with the Intel® QuickAssist compression services
Release W.1.1.0-0029	• Add support for PKE cryptography services
Release W.1.0.0-0022	• Initial release that supports Intel® QAT compression and decompression

1.5 Data Compression Services

This software package provides the following Data Compression services:

- Static Deflate Stateless compression/decompression
- Dynamic Deflate Stateless compression/decompression
- 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 *Table 6*, Intel® Intelligent Storage Application Library GitHub. However, Intel recommends only using the ISA-L DLL included in the Windows QAT driver package.

The QATZip file includes the following compression/decompression functions:

- qzClose
- qzCompress
- qzCompressCrc64
- qzCompressCrc64Ext
- qzCompressExt
- qzDecompress
- qzDecompressCrc64
- qzDecompressCrc64Ext
- qzDecompressExt
- qzFree
- qzGetDefaults
- qzGetSessionCrc64Config
- qzGetSoftwareComponentCount
- qzGetSoftwareComponentVersionList

- qzGetStatus
- qzInit
- qzMalloc
- qzMaxCompressedLength
- qzSetDefault
- qzSetSessionCrc64Config
- qzSetupSession
- qzTeardownSession

Note: Some QATzip API calls may not work due to QAT hardware limitations.

1.6 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, see *Reference Documents*.
- An Intel® QuickAssist CNG provider is registered to support the following PKE algorithms:
  - Rivest-Shamir-Adleman (RSA) with key lengths (2048, 3072, 4096 bit)
  - Elliptic Curve Digital Signature Algorithm (ECDSA) (nistP256/P384/P521)
  - Elliptic-curve Diffie-Hellman ECDH (nistP256/P384/P521 and Curve25519)
- CNG API support in user mode

1.7 Customer Support

Intel® offers support for this software at the Application Program Interface (API) level, defined in *Reference Documents*. If the field representative has created an account for you, submit support requests via the Online Service Center, *https://supporttickets.intel.com/?lang=en-US*.

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.

BDF
: Bus Device Function.

BIOS
: Basic Input/Output System.

BOM
: Bill of Materials.

BSD
: Berkeley Software Distribution.

CBC
: Cipher Block Chaining mode.

CCM
Counter with CBC-MAC mode.

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
Cryptography.

DC
Data Compression.

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.

PF
Physical Function.

PKE
Public Key Encryption.

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

RAS
Reliability, Availability, Serviceability.

RSA
Rivest-Shamir-Adleman.

SAL
Service Access Layer.

SGL
Scatter-Gather List.

SHA
Secure Hash Algorithm.

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.

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

CHAPTER

TWO

LIMITATIONS, KNOWN ISSUES AND RESOLVED ISSUES

This section provides 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.

2.1 Limitations

This release does not support the following:

- QatGen3 device for cryptographical workloads in bare-metal.
- QatGen3 device for SR-IOV mode using Windows Guests.
- QatGen3 device for SR-IOV failover and servicing.
- Static Deflate Stateful compression/decompression
- Dynamic Deflate Stateful compression/decompression
- Symmetric (bulk) cryptography algorithms like Advanced Encryption Standard (AES)
- Fallback for Cryptography services

2.2 Known Issues

The known issues with this software release are listed below.

Note: This list may not be exhaustive.

2.2.1 WCAT workload has ECDHE curve25519 failure

Title	WCAT workload has ECDHE curve25519 failure
Reference	QATE-38965
Description	The ECDHE curve "curve25519" is the default curve for ECDHE in Windows*. The WCAT workload on IIS fails to authenticate when using Intel® QAT to run ECDHE and RSA, using the default curve preference order.
Resolution	Two possible resolutions: Change the default ECDH curve in Windows* to be a curve that is supported by Intel® QAT. The result is that ECDH is executed on Intel® QAT (but not using curve25519). Use the CPMCNGInstaller tool to unregister ECDH provider for QAT. The result is that ECDH is executed on the CPU using the default curve25519.
Affected OS	Windows* Server 2019/2016
Driver/Module	QAT IA - Crypto

2.2.2 Cngtest does not validate fallback operations are working correctly

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. Environment: Supermicro* X11 Intel® QAT Micro-server with 2x 37C8 devices Windows* Server 2016 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 2019/2016
Driver/Module	QAT IA - Crypto

2.2.3 Parcomp unable to read > 1GB file for compression

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 2019/2016
Driver/Module	QAT IA - Compression

2.2.4 Sending malicious data to the VF may result in PCIe* Push/Pull Parity Error or NMI

Title	Sending malicious data to the VF may result in PCIe* Push/Pull Parity Error or NMI
Reference	QATE-41844
Description	When sending malicious or malformed data to the QAT VF driver, especially in kernel mode operations, you may see a PCIe* Push/Pull Parity error or in the worst and rare case, a NMI error.
Resolution	There is currently no workaround for this, it is a hardware limitation.
Affected OS	Windows* Server 2019 Hyper-V and newer
Driver/Module	QAT IA - Base Driver

2.2.5 Multiple concurrent PF/VF comms operations will put VF device in bad state

Title	Multiple concurrent PF/VF comms operations will put VF device in bad state
Reference	QATE-67282
Description	Operations that require multiple concurrent PF/VF communications may result in putting the VF in a bad state. Such operations generally include bring the VF up or down simultaneously (such as during a precisely timed driver installation across multiple VM's and VF's).
Resolution	Restart the affected VM
Affected OS	Windows* Server 2019 Hyper-V and newer Linux* using KVM on kernel 4.04 and newer
Driver/Module	QAT IA - Base Driver

2.2.6 Length headers are not populated for gzipext in SW Fallback on Linux* QATzip

Title	Length headers are not populated for gzipext in SW Fallback on Linux* QATzip
Reference	QATE-74339
Description	When using gzipext on Linux* QATzip version 1.0.x in software fallback mode, the gzipext header will not populate the length field. This may result in Windows* QATzip not being able to decompress this using gzipext (qatgzipext in parcomp sample application).
Resolution	Use gzip decompression (qatgzip for parcomp).
Affected OS	Windows* Server 2016/2019/2022 Linux* using QATzip up to 1.1.1
Driver/Module	QAT IA - Compression

2.2.7 Installation temp folder not deleted when QAT installed as normal user

Title	Installation temp folder not deleted when QAT installed as normal user
Reference	QATE-76914
Description	When QAT is installed as a normal user, the installation temporary folder is not deleted after install is finished or cancelled.
Resolution	The Windows* QAT driver package requires Administrator privileges to install correctly. Folder may be manually removed.
Affected OS	Windows* Server 2016/2019/2022
Driver/Module	QAT IA - Installer

2.2.8 Uninstalling QAT PF driver with active QAT VF's may cause VM shutdown issues

Title	Uninstalling QAT PF driver with active QAT VF's may cause VM shutdown issues
Reference	QATE-76930
Description	When uninstalling the QAT PF driver while there are active QAT VF's on Windows* Guests (Windows* Server 2019 and earlier), it may lead to instability when restarting or shutting down those Guests.
Resolution	This may be an OS limitation, as the same situation does not happen on Windows* Server 2022. The workaround for older OS's is to remove the QAT VF's (via Remove-VMAssignableDevice) first before attempting to uninstall the QAT PF driver.
Affected OS	Windows* Server 2019 with Hyper-V running supported Windows* guests
Driver/Module	QAT IA - Base Driver

2.2.9 In SR-IOV mode, if all QAT devices fail within seconds of each other with heavy I/O, may lead to system instability

Title	In SR-IOV mode, if all QAT devices fail within seconds of each other, with heavy I/O may lead to system instability
Reference	QATE-80480
Description	When all (on platforms with three or more Intel® QAT devices) fail within seconds of each other while performing large amounts of I/O stress (> 40 Gbps), there is a chance of system instability that may lead to a system crash.
Resolution	Restart the affected host system. If problem persists, contact your vendor in replacing the Intel® QAT adapter.
Affected OS	Windows* Server 2019/2022 with Hyper-V running supported Windows* guests
Driver/Module	QAT IA - Base Driver

2.2.10 Repeatedly disable/enable of QAT Linux* VF's will make the Guest VF devices unresponsive

Title	Repeatedly disable/enable of QAT Linux* VF's will make the Guest VF devices unresponsive
Reference	QATE-81066
Description	When repeatedly disabling and enabling the QAT Linux* VF in a 1VM/48VF Guest configuration, the QAT Linux* VF's may become unresponsive.
Resolution	Reboot the Linux* Guest.
Affected OS	Windows* Server 2019 with Hyper-V running supported Linux* guests
Driver/Module	QAT IA - Base Driver

2.2.11 Repeatedly and stressfully referencing invalid memory in SR-IOV enabled Guest may lead to Guest instability

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 2019/2022 with Hyper-V running supported Windows* guests
Driver/Module	QAT IA - Compression

2.2.12 Creating hundreds of QATzip Sessions slows when constrained by Guest resources

Title	Creating hundreds of QATzip Sessions slows when constrained by Guest resources
Reference	QATE-82511
Description	When attempting to create hundreds QATzip Sessions inside a Windows Guest may result in slow downs. This may be caused by insufficient Guest memory.
Resolution	When creating QATzip applications with multiple QATzip Sessions, consider the system resources available.
Affected OS	Windows* Server 2019/2022 with Hyper-V running supported Windows* guests
Driver/Module	QAT IA-Compression

2.2.13 Intel® Atom® C3000 systems occasionally returns QZ_FAIL on (de)compress or QZ_NOSW_NO_HW on qzSetupSession

Title	Intel® Atom® C3000 systems occasionally returns QZ_FAIL on(de)compress or QZ_NOSW_NO_HW on qzSetupSession
Reference	QATE-88631
Description	When running continuous QATzip qzSetupSession and/or compress/decompress operations, user may occasionally (observed in approximately 1 in 1000), the operation may return QZ_FAIL or QZ_NOSW_NO_HW.
Resolution	Add retry mechanism for the QATzip operation.
Affected OS	Windows* 10 Enterprise LTSC
Driver/Module	QAT IA-Compression

2.2.14 Xeon® D-2700 Series in non-BMSM mode only has only 4 available Acceleration Units

Title	Xeon® D-2700 Series in non-Switch mode only has 4 available Acceleration Units
Reference	QATE-92923
Description	When utilizing the Xeon® D-2700 Series in non-Switch Mode (otherwise known as NIC Mode), only 4 of the QAT Acceleration Units are available. This may cause lower than expected performance.
Resolution	None
Affected OS	Windows* Server 2019 and 2022
Driver/Module	QAT IA - Base Driver

2.3 Resolved Issues

The following is a list of resolved issues up to this software release.

Note: This list may not include any undisclosed issues.

2.3.1 Cannot disable driver while parcomp (compression) is running

Title	Cannot disable driver while parcomp (compression) is running
Reference	QATE-36847
Description	When running parcomp stress tests, you cannot disable all QAT devices. Doing so may cause the driver to to spin until the parcomp process is stopped. The issue has been observed mostly on Skylake-D systems.
Resolution	Disable QAT devices only after the compression operations have completed.
Affected OS	Windows* Server 2016/2019
Driver/Module	QAT IA - Compression

2.3.2 Default curve order for elliptic curves not supported by QAT

Title	Default curve order for elliptic curves not supported by QAT
Reference	QATE-37219
Description	The default curve order on Windows when using cipher suites with ECDHE is as follows: curve25519 NistP256 NistP384 Since curve25519 is not supported by Intel® QAT, cryptography operations will fail when using cipher suites with ECDHE.
Resolution	Modify the default ECC Curve Order as below: 1. Launch the Group Policy Editor: gpedit.msc 2. Open Computer Configuration/Administrative Template/Network/ SSL Configuration Settings 3. Double-click ECC Curve Order (in the right pane). 4. Click Enabled. 5. Edit the ECC Curve Order without Curve25519. 6. Click 'Apply' and exit the application.
Affected OS	Windows* Server 2016/2019
Driver/Module	QAT IA - Crypto

2.3.3 Windows Setup /passive install has crypto failures

Title	Windows Setup /passive install has crypto failures
Reference	QATE-38404
Description	When you use the '/passive' option for installation, it seems that Crypto will fail after a few iterations.
Resolution	Please use normal GUI installation or when installing using '/passive, use the /qn' option.
Affected OS	Windows* Server 2016
Driver/Module	QAT IA - Installer

2.3.4 QAT driver and service are sometimes not removed after uninstallation

Title	QAT driver and service are sometimes not removed after uninstallation
Reference	QATE-65388
Description	After uninstalling the QAT driver using control panel or the command line, the driver file icp_qat.sys and the associated Windows service do not get removed properly. Upon reboot, devices in Device Manager will show error code 32.
Resolution	In device manager, right click and uninstall with remove files checked, manually remove icp_qat.sys file.
Affected OS	Windows* Server 2019
Driver/Module	QAT IA - Installer

2.3.5 Compression may randomly fail (qzSetupSession error) after driver installation

Title	Compression may randomly fail (qzSetupSession error) after driver installation uninstallation
Reference	QATE-71057
Description	After a driver installation, there may be a rare occurrence where compression operations will fail qzSetupSession continuously.
Resolution	Restart the system.
Affected OS	Windows* Server 2016/2019/2022
Driver/Module	QAT IA - Compression

2.3.6 Improper usage of QATzip may result in system instability

Title	Improper usage of QATzip may result in system instability
Reference	QATE-71816
Description	Calling QATzip API function QzCompress directly without properly setting up a session via qzSetupSession, and then calling either QzClose or QzTeardownSession can cause a system crash.
Resolution	Ensure a session is properly created via QATzip API function qzSetupSession before attempting to perform compression operations.
Affected OS	Windows* Server 2016/2019/2022
Driver/Module	QAT IA - Compression

2.3.7 Performance counters are not removed after uninstalling package

Title	Performance counters are not removed after uninstalling package
Reference	QATE-76357
Description	QAT performance counters are not being uninstalled on certain versions of Windows*.
Resolution	Counters can be manually removed.
Affected OS	Windows* Server 2016/2019
Driver/Module	QAT IA - Base Driver

2.3.8 Possible MIN macro redefinition error in qatzip.h header file

Title	Possible MIN macro redefinition error in qatzip.h header file
Reference	QATE-77024
Description	The qatzip.h header file defines the macro - MIN as: $define MIN(a,b) (((a)<(b))?(a):(b)) Since this is a very common macro definition, it is likely to be defined in many system headers and as a result, can lead to “macro re-definition” errors.
Resolution	Change the macro name or include an #ifndef around the macro.
Affected OS	Windows* Server 2016/2019/2022
Driver/Module	QAT IA - Compression

2.3.9 During a "No QAT HW" driver install, the user is informed the process is interrupted

Title	During a "No QAT HW" driver install, the user is informed the process is interrupted
Reference	QATE-79074
Description	When finishing a QAT driver package install with no QAT HW, the user is informed that the last information box informs that the install process was interrupted and no changes to system was made. In reality, qatzip.dll was successfully installed in system32.
Resolution	The tooltip was inaccurate, the installation of qatzip.dll was successful.
Affected OS	Windows* Server 2016/2019/2022
Driver/Module	QAT IA - Compression

2.3.10 The isa-l.dll is not being installed for Windows Server Core editions

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.
Affected OS	Windows* Server 2016/2019/2022 Core Edition
Driver/Module	QAT IA - Installer

2.3.11 Driver upgrade with 48 VF's may fail with at least one VF failing to successfully detach

Title	Driver upgrade with 48 VF's may fail with at least one VF failing to successfully detach
Reference	QATE-90525
Description	When attempting to upgrade the Windows QAT PF driver while running a stressful Async-Nginx workload with QAT-Engine in a Linux Guest with QAT 48x VF's attached, user may observe that one or more VF's cannot be detached with following error message: Device is still in use, can't be stopped.
Resolution	Temporarily halt Async-Nginx traffic to perform the Windows PF driver ugprade.
Affected OS	Windows* Server 2022 with Hyper-V running supported Linux* guests
Driver/Module	QAT IA - Base Driver

2.3.12 Update Readme contents to be QAT device agnostic

Title	Update Readme contents to be QAT device agnostic
Reference	QATE-91828
Description	The Readme documentation was not QAT device agnostic. Some references were specific to the C62x device.
Resolution	None
Affected OS	Windows* Server 2016/2019/2022
Driver/Module	QAT IA - Installer

CHAPTER

THREE

SOFTWARE INSTALLATION

The release package includes the Setup.exe installation application. Use this application to install the package on the targeted OS. For more information on how to install the package, refer to the Readme file included in the package:

```
.\quickassist\README.txt
```

Upon completion of the installation, the README text file can also be found in the following folder:

```
<Program Files>\Intel\Intel(R) QuickAssist Technology
```

Note: For those customers that have installed the previous version of the Intel® QAT software package, uninstall it and reboot before installing this new production package.

To ensure software installation completed successfully and that Intel® QAT devices are functional, refer to Figure 3.1:. The screenshot lists three "Intel® C62x Accelerator" devices under the "Security accelerators" PNP Classification.

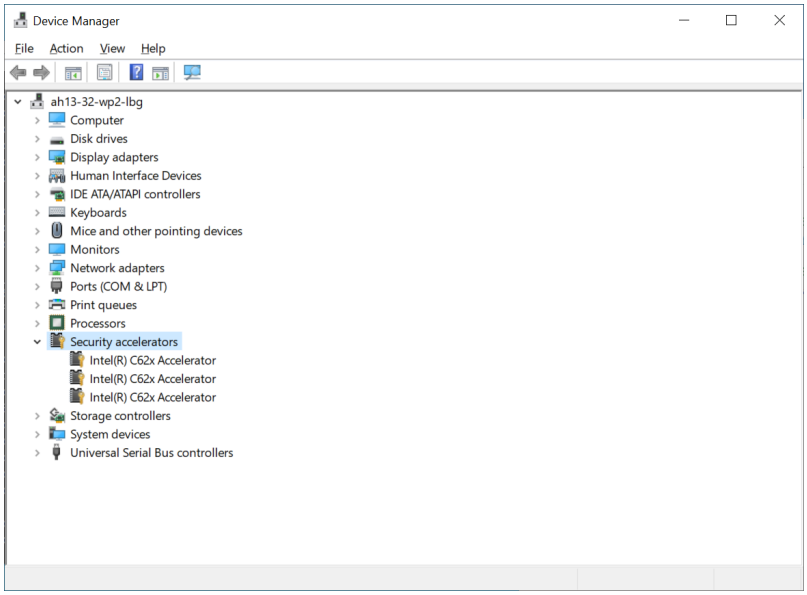

Figure 3.1:: Device Manager with Intel® QuickAssist Driver Installed in Microsoft* Windows*

CHAPTER

FOUR

TEST APPLICATIONS

4.1 Compression Test Application

A compression test application, parcomp, is included in this package. For more information on how to use the parcomp application, refer to the Readme file included in the package. You can find the README file in the following folder upon completion of the installation:

```
<Program Files>\Intel\Intel(R) QuickAssist Technology
```

4.2 Cryptography (PKE) Test Application

A cryptography test application for PKE operations, Cngtest, is included in this package. For more information on how to use the Cngtest application, please refer to the Readme file included in the package. You can find the README file in the following folder upon completion of the installation:

```
<Program Files>\Intel\Intel(R) QuickAssist Technology
```