

QATzip
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Contents

1	Module Index	1
1.1	Modules	1
2	Class Index	3
2.1	Class List	3
3	File Index	5
3.1	File List	5
4	Module Documentation	7
4.1	Data Compression API	7
4.1.1	Detailed Description	8
4.1.2	Macro Definition Documentation	8
4.1.2.1	QATZIP_API_VERSION_NUM_MAJOR	8
4.1.2.2	QATZIP_API_VERSION_NUM_MINOR	8
4.1.2.3	QZ_OK	8
4.1.2.4	QZ_SKID_PAD_SZ	9
4.1.2.5	QZ_SW_EXECUTION_BIT	9
4.1.3	Typedef Documentation	9
4.1.3.1	PinMem_T	9
4.1.3.2	QzCrcType_T	9
4.1.3.3	QzDataFormat_T	10
4.1.3.4	QzDirection_T	10
4.1.3.5	QzHuffmanHdr_T	10
4.1.3.6	QzSession_T	10
4.1.3.7	QzSessionParams_T	11
4.1.3.8	QzStatus_T	11
4.1.3.9	QzStream_T	11
4.1.4	Enumeration Type Documentation	11
4.1.4.1	PinMem_E	11
4.1.4.2	QzCrcType_E	11
4.1.4.3	QzDataFormat_E	11

4.1.4.4	QzDirection_E	12
4.1.4.5	QzHuffmanHdr_E	12
4.1.5	Function Documentation	13
4.1.5.1	qzClose	13
4.1.5.2	qzCompress	13
4.1.5.3	qzCompressCrc	14
4.1.5.4	qzCompressStream	15
4.1.5.5	qzDecompress	16
4.1.5.6	qzDecompressStream	17
4.1.5.7	qzEndStream	18
4.1.5.8	qzFree	19
4.1.5.9	qzGetDefaults	19
4.1.5.10	qzGetStatus	20
4.1.5.11	qzInit	21
4.1.5.12	qzMalloc	22
4.1.5.13	qzMemFindAddr	22
4.1.5.14	qzSetDefaults	23
4.1.5.15	qzSetupSession	23
4.1.5.16	qzTeardownSession	24
5	Class Documentation	27
5.1	QzSession_S Struct Reference	27
5.1.1	Detailed Description	27
5.1.2	Member Data Documentation	27
5.1.2.1	hw_session_stat	27
5.1.2.2	internal	27
5.1.2.3	thd_sess_stat	27
5.1.2.4	total_in	27
5.1.2.5	total_out	28
5.2	QzSessionParams_S Struct Reference	28
5.2.1	Detailed Description	28
5.2.2	Member Data Documentation	28
5.2.2.1	comp_algorithm	28
5.2.2.2	comp_lvl	28
5.2.2.3	data_fmt	28
5.2.2.4	direction	28
5.2.2.5	huffman_hdr	29
5.2.2.6	hw_buff_sz	29
5.2.2.7	input_sz_thrshold	29
5.2.2.8	is_busy_polling	29

5.2.2.9	max_forks	29
5.2.2.10	req_cnt_thrshold	29
5.2.2.11	strm_buff_sz	29
5.2.2.12	sw_backup	29
5.2.2.13	wait_cnt_thrshold	29
5.3	QzStatus_S Struct Reference	29
5.3.1	Detailed Description	30
5.3.2	Member Data Documentation	30
5.3.2.1	algo_hw	30
5.3.2.2	algo_sw	30
5.3.2.3	hw_session_status	30
5.3.2.4	memory_allocated	30
5.3.2.5	qat_hw_count	30
5.3.2.6	qat_instance_attach	30
5.3.2.7	qat_mem_drvr	30
5.3.2.8	qat_service_init	30
5.3.2.9	using_huge_pages	31
5.4	QzStream_S Struct Reference	31
5.4.1	Detailed Description	31
5.4.2	Member Data Documentation	31
5.4.2.1	crc_32	31
5.4.2.2	crc_type	31
5.4.2.3	in	31
5.4.2.4	in_sz	31
5.4.2.5	opaque	32
5.4.2.6	out	32
5.4.2.7	out_sz	32
5.4.2.8	pending_in	32
5.4.2.9	pending_out	32
5.4.2.10	reserved	32
6	File Documentation	33
6.1	include/qatzip.h File Reference	33
6.1.1	Macro Definition Documentation	35
6.1.1.1	MIN	35
6.1.1.2	QATZIP_API	35
6.1.1.3	QATZIP_API_VERSION	35
6.1.1.4	QZ_BUF_ERROR	35
6.1.1.5	QZ_BUSY_POLLING	36
6.1.1.6	QZ_COMP_ALGOL_DEFAULT	36

6.1.1.7	QZ_COMP_LEVEL_DEFAULT	36
6.1.1.8	QZ_COMP_THRESHOLD_DEFAULT	36
6.1.1.9	QZ_COMP_THRESHOLD_MINIMUM	36
6.1.1.10	QZ_COMPRESSED_SZ_OF_EMPTY_FILE	36
6.1.1.11	QZ_DATA_ERROR	36
6.1.1.12	QZ_DATA_FORMAT_DEFAULT	36
6.1.1.13	QZ_DEFLATE	36
6.1.1.14	QZ_DEFLATE_COMP_LVL_MAXIMUM	36
6.1.1.15	QZ_DEFLATE_COMP_LVL_MINIMUM	36
6.1.1.16	QZ_DIRECTION_DEFAULT	36
6.1.1.17	QZ_DUPLICATE	36
6.1.1.18	QZ_FAIL	36
6.1.1.19	QZ_FORCE_SW	36
6.1.1.20	QZ_HUFF_HDR_DEFAULT	36
6.1.1.21	QZ_HW_BUFF_MAX_SZ	36
6.1.1.22	QZ_HW_BUFF_MIN_SZ	36
6.1.1.23	QZ_HW_BUFF_SZ	36
6.1.1.24	QZ_LOW_DEST_MEM	36
6.1.1.25	QZ_LOW_MEM	36
6.1.1.26	QZ_MAX_ALGORITHMS	37
6.1.1.27	QZ_MAX_FORK_DEFAULT	37
6.1.1.28	QZ_NO_HW	37
6.1.1.29	QZ_NO_INST_ATTACH	37
6.1.1.30	QZ_NO_MDRV	37
6.1.1.31	QZ_NO_SW_AVAIL	37
6.1.1.32	QZ_NONE	37
6.1.1.33	QZ_NOSW_LOW_MEM	37
6.1.1.34	QZ_NOSW_NO_HW	37
6.1.1.35	QZ_NOSW_NO_INST_ATTACH	37
6.1.1.36	QZ_NOSW_NO_MDRV	37
6.1.1.37	QZ_PARAMS	37
6.1.1.38	QZ_PERIODICAL_POLLING	37
6.1.1.39	QZ_POLL_SLEEP_DEFAULT	37
6.1.1.40	QZ_REQ_THRESHOLD_DEFAULT	37
6.1.1.41	QZ_REQ_THRESHOLD_MAXIMUM	38
6.1.1.42	QZ_REQ_THRESHOLD_MINIMUM	38
6.1.1.43	QZ_STRM_BUFF_MAX_SZ	38
6.1.1.44	QZ_STRM_BUFF_MIN_SZ	38
6.1.1.45	QZ_STRM_BUFF_SZ_DEFAULT	38
6.1.1.46	QZ_SW_BACKUP_DEFAULT	38

6.1.1.47	QZ_SW_EXECUTION	38
6.1.1.48	QZ_SW_EXECUTION_MASK	38
6.1.1.49	QZ_WAIT_CNT_THRESHOLD_DEFAULT	38
6.1.2	Function Documentation	38
6.1.2.1	qzCompressCrcExt	38
6.1.2.2	qzCompressExt	38
6.1.2.3	qzDecompressExt	38
6.1.2.4	qzMaxCompressedLength	38

Index**39**

Chapter 1

Module Index

1.1 Modules

Here is a list of all modules:

Data Compression API	7
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Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

QzSession_S	27
QzSessionParams_S	28
QzStatus_S	29
QzStream_S	31

Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

include/ qatzip.h	33
---	----

Chapter 4

Module Documentation

4.1 Data Compression API

Classes

- struct [QzSessionParams_S](#)
- struct [QzSession_S](#)
- struct [QzStatus_S](#)
- struct [QzStream_S](#)

Macros

- #define [QATZIP_API_VERSION_NUM_MAJOR](#) (1)
- #define [QATZIP_API_VERSION_NUM_MINOR](#) (5)
- #define [QZ_OK](#) (0)
- #define [QZ_SW_EXECUTION_BIT](#) (4)
- #define [QZ_SKID_PAD_SZ](#) 48

Typedefs

- typedef enum [QzHuffmanHdr_E](#) [QzHuffmanHdr_T](#)
- typedef enum [PinMem_E](#) [PinMem_T](#)
- typedef enum [QzDirection_E](#) [QzDirection_T](#)
- typedef enum [QzDataFormat_E](#) [QzDataFormat_T](#)
- typedef enum [QzCrcType_E](#) [QzCrcType_T](#)
- typedef struct [QzSessionParams_S](#) [QzSessionParams_T](#)
- typedef struct [QzSession_S](#) [QzSession_T](#)
- typedef struct [QzStatus_S](#) [QzStatus_T](#)
- typedef struct [QzStream_S](#) [QzStream_T](#)

Enumerations

- enum [QzHuffmanHdr_E](#) { [QZ_DYNAMIC_HDR](#) = 0, [QZ_STATIC_HDR](#) }
- enum [PinMem_E](#) { [COMMON_MEM](#) = 0, [PINNED_MEM](#) }
- enum [QzDirection_E](#) { [QZ_DIR_COMPRESS](#) = 0, [QZ_DIR_DECOMPRESS](#), [QZ_DIR_BOTH](#) }
- enum [QzDataFormat_E](#) {
 [QZ_DEFLATE_4B](#) = 0, [QZ_DEFLATE_GZIP](#), [QZ_DEFLATE_GZIP_EXT](#), [QZ_DEFLATE_RAW](#),
 [QZ_FMT_NUM](#) }
- enum [QzCrcType_E](#) { [QZ_CRC32](#) = 0, [QZ_ADLER](#), [NONE](#) }

Functions

- `QATZIP_API int qzInit (QzSession_T *sess, unsigned char sw_backup)`
- `QATZIP_API int qzSetupSession (QzSession_T *sess, QzSessionParams_T *params)`
- `QATZIP_API int qzCompress (QzSession_T *sess, const unsigned char *src, unsigned int *src_len, unsigned char *dest, unsigned int *dest_len, unsigned int last)`
- `QATZIP_API int qzCompressCrc (QzSession_T *sess, const unsigned char *src, unsigned int *src_len, unsigned char *dest, unsigned int *dest_len, unsigned int last, unsigned long *crc)`
- `QATZIP_API int qzDecompress (QzSession_T *sess, const unsigned char *src, unsigned int *src_len, unsigned char *dest, unsigned int *dest_len)`
- `QATZIP_API int qzTeardownSession (QzSession_T *sess)`
- `QATZIP_API int qzClose (QzSession_T *sess)`
- `QATZIP_API int qzGetStatus (QzSession_T *sess, QzStatus_T *status)`
- `QATZIP_API int qzSetDefaults (QzSessionParams_T *defaults)`
- `QATZIP_API int qzGetDefaults (QzSessionParams_T *defaults)`
- `QATZIP_API void * qzMalloc (size_t sz, int numa, int force_pinned)`
- `QATZIP_API void qzFree (void *m)`
- `QATZIP_API int qzMemFindAddr (unsigned char *a)`
- `QATZIP_API int qzCompressStream (QzSession_T *sess, QzStream_T *strm, unsigned int last)`
- `QATZIP_API int qzDecompressStream (QzSession_T *sess, QzStream_T *strm, unsigned int last)`
- `QATZIP_API int qzEndStream (QzSession_T *sess, QzStream_T *strm)`

4.1.1 Detailed Description

These functions specify the API for data compression operations.

Remarks

4.1.2 Macro Definition Documentation

4.1.2.1 `#define QATZIP_API_VERSION_NUM_MAJOR (1)`

`QATzip Major Version Number`

The QATzip API major version number. This number will be incremented when significant changes to the API have occurred. The combination of the major and minor number definitions represent the complete version number for this interface.

4.1.2.2 `#define QATZIP_API_VERSION_NUM_MINOR (5)`

`QATzip Minor Version Number`

The QATzip API minor version number. This number will be incremented when minor changes to the API have occurred. The combination of the major and minor number definitions represent the complete version number for this interface.

4.1.2.3 `#define QZ_OK (0)`

`QATzip Session Status definitions and function return codes`

This list identifies valid values for session status and function return codes. Success

4.1.2.4 `#define QZ_SKID_PAD_SZ 48`

Get the maximum compressed output length

Get the maximum compressed output length.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

<code>in</code>	<code>src_sz</code>	Input data length in bytes sess Session handle (pointer to opaque instance and session data)
-----------------	---------------------	--

Return values

<code>dest_sz</code>	Max compressed data output length in bytes. When <code>src_sz</code> is equal to 0, the return value is QZ_COMPRESSED_SZ_OF_EMPTY_FILE(34) . When integer overflow happens, the return value is 0
----------------------	---

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.2.5 `#define QZ_SW_EXECUTION_BIT (4)`

QATzip Extended return information

The following definitions can be used with the extended return values.

`QZ_SW_EXECUTION` indicates if a request for services was performed in software.

4.1.3 Typedef Documentation

4.1.3.1 `typedef enum PinMem_E PinMem_T`

Supported memory types

This enumerated list identifies memory types supported by QATzip.

4.1.3.2 `typedef enum QzCrcType_E QzCrcType_T`

Supported checksum type

This enumerated list identifies the checksum type for input/output data. The format can be CRC32, Adler or none.

4.1.3.3 typedef enum QzDataFormat_E QzDataFormat_T

Streaming API input and output format

This enumerated list identifies the data format supported by QATzip streaming API. A format can be raw deflate data block, deflate block wrapped by GZip header and footer, or deflate data block wrapped by GZip extension header and footer.

4.1.3.4 typedef enum QzDirection_E QzDirection_T

Compress or decompress setting

This enumerated list identifies the session directions supported by QATzip. A session can be compress, decompress or both.

4.1.3.5 typedef enum QzHuffmanHdr_E QzHuffmanHdr_T

This API provides access to underlying compression functions in QAT hardware. The API supports an implementation that provides compression service in software if all of the required resources are not available to execute the compression service in hardware.

The API supports threaded applications. Applications can create threads and each of these threads can invoke the API defined herein.

For simplicity, initializations and setup function calls are not required to obtain compression services. If the initialization and setup functions are not called before compression or decompression requests, then they will be called with default arguments from within the compression or decompression functions. This results in several legal calling scenarios, described below.

Scenario 1 - All functions explicitly invoked by caller, with all arguments provided.

```
qzInit(&sess, sw_backup); qzSetupSession(&sess, &params); qzCompress(&sess, src, &src_len, dest, &dest_len, 1); qzDecompress(&sess, src, &src_len, dest, &dest_len); qzTeardownSession(&sess); qzClose(&sess);
```

Scenario 2 - Initialization function called, setup function not invoked by caller. This scenario can be used to specify the sw_backup argument to qzInit.

```
qzInit(&sess, sw_backup); qzCompress(&sess, src, &src_len, dest, &dest_len, 1); calls qzSetupSession(sess, NULL); qzTeardownSession(&sess); qzClose(&sess);
```

Scenario 3 - Calling application simply invokes the actual qzCompress functions.

```
qzCompress(&sess, src, &src_len, dest, &dest_len, 0); calls qzInit(sess, 1); calls qzSetupSession(sess, NULL); qzCompress(&sess, src, &src_len, dest, &dest_len, 1);
```

Notes: Invoking qzSetupSession with NULL for params sets up a session with default session attributed, detailed in the function description below.

If an application terminates without invoking tear down and close functions, process termination will invoke memory and hardware instance cleanup.

If a thread terminates without invoking tear down and close functions, memory and hardware are not cleaned up until the application exits.

Supported Huffman Headers

This enumerated list identifies the Huffman header types supported by QATzip.

4.1.3.6 typedef struct QzSession_S QzSession_T

QATzip Session opaque data storage

This structure contains a pointer to a structure with session state.

4.1.3.7 typedef struct QzSessionParams_S QzSessionParams_T

QATzip Session Initialization parameters

This structure contains data for initializing a session.

4.1.3.8 typedef struct QzStatus_S QzStatus_T

QATzip status structure

This structure contains data relating to the status of QAT on the platform.

4.1.3.9 typedef struct QzStream_S QzStream_T

QATzip Stream data storage

This structure contains metadata needed for stream operation.

4.1.4 Enumeration Type Documentation

4.1.4.1 enum PinMem_E

Supported memory types

This enumerated list identifies memory types supported by QATzip.

Enumerator

COMMON_MEM Allocate non-contiguous memory

PINNED_MEM Allocate contiguous memory

4.1.4.2 enum QzCrcType_E

Supported checksum type

This enumerated list identifies the checksum type for input/output data. The format can be CRC32, Adler or none.

Enumerator

QZ_CRC32 CRC32 checksum

QZ_ADLER Adler checksum

NONE No checksum

4.1.4.3 enum QzDataFormat_E

Streaming API input and output format

This enumerated list identifies the data format supported by QATzip streaming API. A format can be raw deflate data block, deflate block wrapped by GZip header and footer, or deflate data block wrapped by GZip extension header and footer.

Enumerator

QZ_DEFLATE_4B Data is in raw deflate format with 4 byte header

QZ_DEFLATE_GZIP Data is in deflate wrapped by GZip header and footer

QZ_DEFLATE_GZIP_EXT Data is in deflate wrapped by GZip extended header and footer

QZ_DEFLATE_RAW Data is in raw deflate format

QZ_FMT_NUM

4.1.4.4 enum QzDirection_E

Compress or decompress setting

This enumerated list identifies the session directions supported by QATzip. A session can be compress, decompress or both.

Enumerator

QZ_DIR_COMPRESS Session will be used for compression

QZ_DIR_DECOMPRESS Session will be used for decompression

QZ_DIR_BOTH Session will be used for both compression and decompression

4.1.4.5 enum QzHuffmanHdr_E

This API provides access to underlying compression functions in QAT hardware. The API supports an implementation that provides compression service in software if all of the required resources are not available to execute the compression service in hardware.

The API supports threaded applications. Applications can create threads and each of these threads can invoke the API defined herein.

For simplicity, initializations and setup function calls are not required to obtain compression services. If the initialization and setup functions are not called before compression or decompression requests, then they will be called with default arguments from within the compression or decompression functions. This results in several legal calling scenarios, described below.

Scenario 1 - All functions explicitly invoked by caller, with all arguments provided.

```
qzInit(&sess, sw_backup); qzSetupSession(&sess, &params); qzCompress(&sess, src, &src_len, dest, &dest_len, 1); qzDecompress(&sess, src, &src_len, dest, &dest_len); qzTeardownSession(&sess); qzClose(&sess);
```

Scenario 2 - Initialization function called, setup function not invoked by caller. This scenario can be used to specify the sw_backup argument to qzInit.

```
qzInit(&sess, sw_backup); qzCompress(&sess, src, &src_len, dest, &dest_len, 1); calls qzSetupSession(sess, NULL); qzTeardownSession(&sess); qzClose(&sess);
```

Scenario 3 - Calling application simply invokes the actual qzCompress functions.

```
qzCompress(&sess, src, &src_len, dest, &dest_len, 0); calls qzInit(sess, 1); calls qzSetupSession(sess, NULL); qzCompress(&sess, src, &src_len, dest, &dest_len, 1);
```

Notes: Invoking qzSetupSession with NULL for params sets up a session with default session attributed, detailed in the function description below.

If an application terminates without invoking tear down and close functions, process termination will invoke memory and hardware instance cleanup.

If a thread terminates without invoking tear down and close functions, memory and hardware are not cleaned up until the application exits.

Supported Huffman Headers

This enumerated list identifies the Huffman header types supported by QATzip.

Enumerator

QZ_DYNAMIC_HDR Full Dynamic Huffman Trees**QZ_STATIC_HDR** Static Huffman Trees

4.1.5 Function Documentation

4.1.5.1 QATZIP_API int qzClose (QzSession_T * sess)

Terminates a QATzip session

This function closes the connection with QAT.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

in	sess	Session handle (pointer to opaque instance and session data)
----	------	--

Return values

QZ_OK	Function executed successfully
QZ_FAIL	Function did not succeed
QZ_PARAMS	*sess is NULL or member of params is invalid

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.2 QATZIP_API int qzCompress (QzSession_T * sess, const unsigned char * src, unsigned int * src_len, unsigned char * dest, unsigned int * dest_len, unsigned int last)

Compress a buffer

This function will compress a buffer if either a hardware based session or a software based session is available. If no session has been established - as indicated by the contents of *sess - then this function will attempt to set up a session using qzInit and qzSetupSession.

The resulting compressed block of data will be composed of one or more gzip blocks, as per RFC 1952.

This function will place completed compression blocks in the output buffer.

The caller must check the updated src_len. This value will be the number of consumed bytes on exit. The calling API may have to process the destination buffer and call again.

The parameter dest_len will be set to the number of bytes produced in the destination buffer. This value may be zero if no data was produced which may occur if the consumed data is retained internally. A possible reason for this may be small amounts of data in the src buffer.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

in	<i>sess</i>	Session handle (pointer to opaque instance and session data)
in	<i>src</i>	Point to source buffer
in, out	<i>src_len</i>	Length of source buffer. Modified to number of bytes consumed
in	<i>dest</i>	Point to destination buffer
in, out	<i>dest_len</i>	Length of destination buffer. Modified to length of compressed data when function returns
in	<i>last</i>	1 for 'No more data to be compressed' 0 for 'More data to be compressed'
in, out	<i>ext_rc</i>	qzCompressExt only. If not NULL, ext_rc point to a location where extended return codes may be returned. See extended return code section for details. if NULL, no extended information will be provided.

Return values

<i>QZ_OK</i>	Function executed successfully
<i>QZ_FAIL</i>	Function did not succeed
<i>QZ_PARAMS</i>	*sess is NULL or member of params is invalid

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.3 QATZIP_API int qzCompressCrc (QzSession_T * sess, const unsigned char * src, unsigned int * src_len, unsigned char * dest, unsigned int * dest_len, unsigned int last, unsigned long * crc)

Compress a buffer and return the CRC checksum

This function will compress a buffer if either a hardware based session or a software based session is available. If no session has been established - as indicated by the contents of *sess - then this function will attempt to set up a session using qzInit and qzSetupSession.

The resulting compressed block of data will be composed of one or more gzip blocks, as per RFC 1952.

This function will place completed compression blocks in the output buffer and put CRC32 checksum for compressed input data in user provided buffer *crc.

The caller must check the updated src_len. This value will be the number of consumed bytes on exit. The calling API may have to process the destination buffer and call again.

The parameter dest_len will be set to the number of bytes produced in the destination buffer. This value may be zero if no data was produced which may occur if the consumed data is retained internally. A possible reason for this may be small amounts of data in the src buffer.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

in	<i>sess</i>	Session handle (pointer to opaque instance and session data)
in	<i>src</i>	Point to source buffer
in, out	<i>src_len</i>	Length of source buffer. Modified to number of bytes consumed
in	<i>dest</i>	Point to destination buffer
in, out	<i>dest_len</i>	Length of destination buffer. Modified to length of compressed data when function returns
in	<i>last</i>	1 for 'No more data to be compressed' 0 for 'More data to be compressed'
in, out	<i>crc</i>	Pointer to CRC32 checksum buffer
in, out	<i>ext_rc</i>	qzCompressCrcExt only. If not NULL, ext_rc point to a location where extended return codes may be returned. See extended return code section for details. if NULL, no extended information will be provided.

Return values

<i>QZ_OK</i>	Function executed successfully
<i>QZ_FAIL</i>	Function did not succeed
<i>QZ_PARAMS</i>	*sess is NULL or member of params is invalid

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.4 QATZIP_API int qzCompressStream (QzSession_T * sess, QzStream_T * strm, unsigned int last)

Compress data in stream and return checksum

This function will compress data in stream buffer if either a hardware based session or a software based session is available. If no session has been established - as indicated by the contents of *sess - then this function will attempt to set up a session using qzInit and qzSetupSession. The function will start to compress the data when receiving sufficient number of bytes - as defined by hw_buff_sz in QzSessionParams_T - or reaching the end of input data - as indicated by last parameter.

The resulting compressed block of data will be composed of one or more gzip blocks, per RFC 1952, or deflate blocks, per RFC 1951.

This function will place completed compression blocks in the *out of QzStream_T structure and put checksum for compressed input data in crc32 of QzStream_T structure.

The caller must check the updated in_sz of QzStream_T. This value will be the number of consumed bytes on exit. The calling API may have to process the destination buffer and call again.

The parameter out_sz in QzStream_T will be set to the number of bytes produced in the destination buffer. This value may be zero if no data was produced which may occur if the consumed data is retained internally. A possible reason for this may be small amounts of data in the src buffer.

The caller must check the updated `pending_in` of `QzStream_T`. This value will be the number of unprocessed bytes held in `QATzip`. The calling API may have to feed more input data or indicate reaching the end of input and call again.

The caller must check the updated `pending_out` of `QzStream_T`. This value will be the number of processed bytes held in `QATzip`. The calling API may have to process the destination buffer and call again.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

<code>in</code>	<code>sess</code>	Session handle (pointer to opaque instance and session data)
<code>in, out</code>	<code>strm</code>	Stream handle
<code>in</code>	<code>last</code>	1 for 'No more data to be compressed' 0 for 'More data to be compressed' (always set to 1 in the Microsoft(R) Windows(TM) QATzip implementation)

Return values

<code>QZ_OK</code>	Function executed successfully
<code>QZ_FAIL</code>	Function did not succeed
<code>QZ_PARAMS</code>	*sess is NULL or member of params is invalid

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.5 QATZIP_API int qzDecompress (QzSession_T * sess, const unsigned char * src, unsigned int * src_len, unsigned char * dest, unsigned int * dest_len)

Decompress a buffer

This function will decompress a buffer if either a hardware based session or a software based session is available. If no session has been established - as indicated by the contents of `*sess` - then this function will attempt to set up a session using `qzInit` and `qzSetupSession`.

The input compressed block of data will be composed of one or more gzip blocks, as per RFC 1952.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

<code>in</code>	<code>sess</code>	Session handle (pointer to opaque instance and session data)
<code>in</code>	<code>src</code>	Point to source buffer

in	<i>src_len</i>	Length of source buffer. Modified to length of processed compressed data when function returns
in	<i>dest</i>	Point to destination buffer
in, out	<i>dest_len</i>	Length of destination buffer. Modified to length of decompressed data when function returns
in, out	<i>ext_rc</i>	qzDecompressExt only. If not NULL, <i>ext_rc</i> point to a location where extended return codes may be returned. See extended return code section for details. if NULL, no extended information will be provided.

Return values

<i>QZ_OK</i>	Function executed successfully
<i>QZ_FAIL</i>	Function did not succeed
<i>QZ_PARAMS</i>	*sess is NULL or member of params is invalid

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.6 QATZIP_API int qzDecompressStream (QzSession_T * sess, QzStream_T * strm, unsigned int last)

Decompress data in stream and return checksum

This function will decompress data in stream buffer if either a hardware based session or a software based session is available. If no session has been established - as indicated by the contents of *sess - then this function will attempt to set up a session using qzInit and qzSetupSession. The function will start to decompress the data when receiving sufficient number of bytes - as defined by *hw_buff_sz* in *QzSessionParams_T* - or reaching the end of input data - as indicated by *last* parameter.

The input compressed block of data will be composed of one or more gzip blocks, per RFC 1952, or deflate blocks, per RFC 1951.

This function will place completed decompression blocks in the *out of *QzStream_T* structure and put checksum for decompressed data in *crc32* of *QzStream_T* structure.

The caller must check the updated *in_sz* of *QzStream_T*. This value will be the number of consumed bytes on exit. The calling API may have to process the destination buffer and call again.

The parameter *out_sz* in *QzStream_T* will be set to the number of bytes produced in the destination buffer. This value may be zero if no data was produced which may occur if the consumed data is retained internally. A possible reason for this may be small amounts of data in the *src* buffer.

The caller must check the updated *pending_in* of *QzStream_T*. This value will be the number of unprocessed bytes held in *QATzip*. The calling API may have to feed more input data or indicate reaching the end of input and call again.

The caller must check the updated *pending_out* of *QzStream_T*. This value will be the number of processed bytes held in *QATzip*. The calling API may have to process the destination buffer and call again.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

<i>in</i>	<i>sess</i>	Session handle (pointer to opaque instance and session data)
<i>in, out</i>	<i>strm</i>	Stream handle
<i>in</i>	<i>last</i>	1 for 'No more data to be compressed' 0 for 'More data to be compressed'

Return values

<i>QZ_OK</i>	Function executed successfully
<i>QZ_FAIL</i>	Function did not succeed
<i>QZ_PARAMS</i>	*sess is NULL or member of params is invalid
<i>QZ_NEED_MORE</i>	*last is set but end of block is absent

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.7 QATZIP_API int qzEndStream (QzSession_T * sess, QzStream_T * strm)

Terminates a QATzip stream

This function disconnects stream handle from session handle then reset stream flag and release stream memory.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

<i>in</i>	<i>sess</i>	Session handle (pointer to opaque instance and session data)
-----------	-------------	--

Return values

<i>QZ_OK</i>	Function executed successfully
<i>QZ_FAIL</i>	Function did not succeed
<i>QZ_PARAMS</i>	*sess is NULL or member of params is invalid

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.8 QATZIP_API void qzFree (void * *m*)

Free allocated memory

Free allocated memory.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

<i>in</i>	<i>m</i>	Memory address to be freed
-----------	----------	----------------------------

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.9 QATZIP_API int qzGetDefaults (QzSessionParams_T * *defaults*)

Get default QzSessionParams_T value

Get default QzSessionParams_T value.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

<i>in</i>	<i>defaults</i>	The pointer to default value
-----------	-----------------	------------------------------

Return values

<i>QZ_OK</i>	Success on getting default value
<i>QZ_PARAM</i>	Fail to get default value

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.10 QATZIP_API int qzGetStatus (QzSession_T * sess, QzStatus_T * status)

Get current QAT status

This function retrieves the status of QAT in the platform. The status structure will be filled in as follows: qat_hw_count Number of discovered QAT devices on PCU bus qat_service_init 1 if qzInit has been successfully run, 0 otherwise qat_mem_drvr 1 if the QAT memory driver is installed, 0 otherwise qat_instance_attach 1 if session has attached to a hardware instance, 0 otherwise memory_allocated Amount of memory, in kilobytes, from kernel or huge pages allocated by this process/thread. using_huge_pages 1 if memory is being allocated from huge pages, 0 if memory is being allocated from standard kernel memory hw_session_status Hw session status: one of: QZ_OK QZ_FAIL QZ_NO_HW QZ_NO_MDRV QZ_NO_INST_ATTACH QZ_LOW_MEM QZ_NOSW_NO_HW QZ_NOSW_NO_MDRV QZ_NOSW_NO_INST_ATTACH QZ_NOSW_LOW_MEM QZ_NO_SW_AVAIL

Applications should verify the elements of the status structure are correct for the required operations. It should be noted that some information will be available only after qzInit has been called, either implicitly or explicitly. The qat_service_init element of the status structure will indicate if initialization has taken place.

The hw_session_status will depend on the availability of hardware based compression and software based compression. The following table indicates what hw_session_status based on the availability of compression engines and the sw_backup flag.

| HW | SW Engine | sw_backup | hw_session_stat |

avail	avail	setting	
N	N	0	QZ_NOSW_NO_HW
N	N	1	QZ_NOSW_NO_HW
N	Y	0	QZ_FAIL
N	Y	1	QZ_NO_HW (1)
Y	N	0	QZ_OK
Y	N	1	QZ_NO_SW_AVAIL (2)
Y	Y	0	QZ_OK
Y	Y	1	QZ_OK

Note 1: If an application indicates software backup is required by setting sw_backup=1, and a software engine is available and if no hardware based compression engine is available then the hw_session_status will be set to QZ_NO_HW. All compression and decompression will use the software engine. Note 2: If an application indicates software backup is required by setting sw_backup=1, and if no software based compression engine is available then the hw_session_status will be set to QZ_NO_SW_AVAIL. In this case, QAT based compression may be used however no software backup will available. If the application relies on software backup being available, then this return code can be treated as an error. This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

in	sess	Session handle (pointer to opaque instance and session data)
in	status	Pointer to QATzip status structure

Return values

QZ_OK	Function executed successfully. The hardware based compression session has been created
QZ_PARAMS	*status is NULL

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.11 QATZIP_API int qzlnit (QzSession_T * sess, unsigned char sw_backup)

Initialize QAT hardware

This function initializes the QAT hardware. This function is optional in the function calling sequence. If desired, this call can be made to avoid latency impact during the first call to qzDecompress or qzCompress, or to set the sw_backup parameter explicitly. The input parameter sw_backup specifies the behavior of the function and that of the functions called with the same session in the event there are insufficient resources to establish a QAT based compression or decompression session.

The required resources include access to the QAT hardware, contiguous pinned memory for mapping the hardware rings, and contiguous pinned memory for buffers.

This function shall not be called in an interrupt context. None This function will: 1) start the user space driver if necessary 2) allocate all hardware instances available Yes No Yes

Parameters

in	sess	Session handle (pointer to opaque instance and session data.)
in	sw_backup	0 for no sw backup, 1 for sw backup

Return values

QZ_OK	Function executed successfully. A hardware or software instance has been allocated to the calling process/thread
QZ_DUPLICATE	This process/thread already has a hardware instance
QZ_PARAMS	*sess is NULL
QZ_NOSW_NO_HW	No hardware and no software session being established
QZ_NOSW_NO_MDRV	No memory driver. No software session established
QZ_NOSW_NO_INST_ATTACH	No instance available No software session established
QZ_NOSW_LOW_MEM	Not enough pinned memory available No software session established
QZ_NO_SW_AVAIL	No software is available. This will be returned when sw_backup is set to 1 but the session does not support software backup or software backup is unavailable to the application.

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.12 QATZIP_API void* qzMalloc (size_t sz, int numa, int force_pinned)

Allocate different types of memory

Allocate different types of memory.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

in	sz	Memory size to be allocated
in	numa	NUMA node from which to allocate memory
in	force_pinned	PINNED_MEM allocate contiguous memory COMMON_MEM allocate non-contiguous memory

Return values

NULL	Fail to allocate memory
address	The address of allocated memory

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.13 QATZIP_API int qzMemFindAddr (unsigned char * a)

Check whether the address is available

Check whether the address is available.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

in	a	Address to be checked
----	---	-----------------------

Return values

1	The address is available
0	The address is not available

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.14 QATZIP_API int qzSetDefaults (QzSessionParams_T * defaults)

Set default QzSessionParams_T value

Set default QzSessionParams_T value.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

<i>in</i>	<i>defaults</i>	The pointer to value to be set as default
-----------	-----------------	---

Return values

<i>QZ_OK</i>	Success on setting default value
<i>QZ_PARAM</i>	Fail to set default value

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.15 QATZIP_API int qzSetupSession (QzSession_T * sess, QzSessionParams_T * params)

Initialize a QATzip session

This function establishes a QAT session. This involves associating a hardware instance to the session, allocating buffers. If all of these activities can not be completed successfully, then this function will set up a software based session of param->sw_backup that is set to 1.

Before this function is called, the hardware must have been successfully started via qzInit.

If *sess includes an existing hardware or software session, then this session will be torn down before a new one is attempted.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

in	<i>sess</i>	Session handle (pointer to opaque instance and session data)
in	<i>params</i>	Parameters for session

Return values

<i>QZ_OK</i>	Function executed successfully. A hardware or software based compression session has been created
<i>QZ_PARAMS</i>	*sess is NULL or member of params is invalid
<i>QZ_NOSW_NO_HW</i>	No hardware and no sw session being established
<i>QZ_NOSW_NO_MDRV</i>	No memory driver. No software session established
<i>QZ_NOSW_NO_INST_AT-TACH</i>	No instance available No software session established
<i>QZ_NO_LOW_MEM</i>	Not enough pinned memory available No software session established
<i>QZ_NO_SW_AVAIL</i>	No software is available. This may returned when sw_backup is set to 1 but the session does not support software backup or software backup is unavailable to the application.

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

4.1.5.16 QATZIP_API int qzTeardownSession (QzSession_T * sess)

Uninitialize a QATzip session

This function disconnects a session from a hardware instance and deallocates buffers. If no session has been initialized, then no action will take place.

This function shall not be called in an interrupt context. None None Yes No Yes

Parameters

in	<i>sess</i>	Session handle (pointer to opaque instance and session data)
----	-------------	--

Return values

<i>QZ_OK</i>	Function executed successfully
<i>QZ_FAIL</i>	Function did not succeed
<i>QZ_PARAMS</i>	*sess is NULL or member of params is invalid

Precondition

None

Postcondition

None

Note

Only a synchronous version of this function is provided.

See Also

None

Chapter 5

Class Documentation

5.1 QzSession_S Struct Reference

```
#include <qatzip.h>
```

Public Attributes

- signed long int [hw_session_stat](#)
- int [thd_sess_stat](#)
- void * [internal](#)
- unsigned long [total_in](#)
- unsigned long [total_out](#)

5.1.1 Detailed Description

QATzip Session opaque data storage

This structure contains a pointer to a structure with session state.

5.1.2 Member Data Documentation

5.1.2.1 signed long int QzSession_S::hw_session_stat

Filled in during initialization, session startup and decompression

5.1.2.2 void* QzSession_S::internal

Session data is opaque to outside world

5.1.2.3 int QzSession_S::thd_sess_stat

Note process compression and decompression thread state

5.1.2.4 unsigned long QzSession_S::total_in

Total processed input data length in this session

5.1.2.5 unsigned long QzSession_S::total_out

Total output data length in this session

The documentation for this struct was generated from the following file:

- [include/qatzip.h](#)

5.2 QzSessionParams_S Struct Reference

```
#include <qatzip.h>
```

Public Attributes

- [QzHuffmanHdr_T](#) [huffman_hdr](#)
- [QzDirection_T](#) [direction](#)
- [QzDataFormat_T](#) [data_fmt](#)
- unsigned int [comp_lvl](#)
- unsigned char [comp_algorithm](#)
- unsigned int [max_forks](#)
- unsigned char [sw_backup](#)
- unsigned int [hw_buff_sz](#)
- unsigned int [strm_buff_sz](#)
- unsigned int [input_sz_thrshold](#)
- unsigned int [req_cnt_thrshold](#)
- unsigned int [wait_cnt_thrshold](#)
- bool [is_busy_polling](#)

5.2.1 Detailed Description

QATzip Session Initialization parameters

This structure contains data for initializing a session.

5.2.2 Member Data Documentation

5.2.2.1 unsigned char QzSessionParams_S::comp_algorithm

Compress/decompression algorithms

5.2.2.2 unsigned int QzSessionParams_S::comp_lvl

Compression level 1 to MAX_COMP_LEVEL

5.2.2.3 QzDataFormat_T QzSessionParams_S::data_fmt

Deflate, deflate with GZip or deflate with GZip ext

5.2.2.4 QzDirection_T QzSessionParams_S::direction

Compress or decompress

5.2.2.5 QzHuffmanHdr_T QzSessionParams_S::huffman_hdr

Dynamic or Static Huffman headers

5.2.2.6 unsigned int QzSessionParams_S::hw_buff_sz

Default buffer size, must be a power of 2k 4K,8K,16K,32K,64K,128K

5.2.2.7 unsigned int QzSessionParams_S::input_sz_threshold

Default threshold of compression service's input size for sw failover, if the size of input request is less than the threshold, QATzip will route the request to software

5.2.2.8 bool QzSessionParams_S::is_busy_polling

true means busy polling

5.2.2.9 unsigned int QzSessionParams_S::max_forks

Maximum forks permitted in the current thread 0 means no forking permitted

5.2.2.10 unsigned int QzSessionParams_S::req_cnt_threshold

Set between 1 and NUM_BUFF, default NUM_BUFF NUM_BUFF is defined in qatzip_internal.h

5.2.2.11 unsigned int QzSessionParams_S::strm_buff_sz

Stream buffer size between [1K .. 2M - 5K] Default strm_buf_sz equals to hw_buff_sz

5.2.2.12 unsigned char QzSessionParams_S::sw_backup

0 means no sw backup, 1 means sw backup

5.2.2.13 unsigned int QzSessionParams_S::wait_cnt_threshold

When previous try failed, wait for specific number of calls before retrying to open device. Default threshold is 8

The documentation for this struct was generated from the following file:

- [include/qatzip.h](#)

5.3 QzStatus_S Struct Reference

```
#include <qatzip.h>
```

Public Attributes

- unsigned short int [qat_hw_count](#)
- unsigned char [qat_service_init](#)
- unsigned char [qat_mem_drvr](#)

- unsigned char [qat_instance_attach](#)
- unsigned long int [memory_allocated](#)
- unsigned char [using_huge_pages](#)
- signed long int [hw_session_status](#)
- unsigned char [algo_sw](#) [QZ_MAX_ALGORITHMS]
- unsigned char [algo_hw](#) [QZ_MAX_ALGORITHMS]

5.3.1 Detailed Description

QATzip status structure

This structure contains data relating to the status of QAT on the platform.

5.3.2 Member Data Documentation

5.3.2.1 unsigned char QzStatus_S::algo_hw[QZ_MAX_ALGORITHMS]

Count of hardware devices supporting algorithms

5.3.2.2 unsigned char QzStatus_S::algo_sw[QZ_MAX_ALGORITHMS]

Support software algorithms

5.3.2.3 signed long int QzStatus_S::hw_session_status

One of QATzip Session Status

5.3.2.4 unsigned long int QzStatus_S::memory_allocated

Amount of memory allocated by this thread/process

5.3.2.5 unsigned short int QzStatus_S::qat_hw_count

From PCI scan

5.3.2.6 unsigned char QzStatus_S::qat_instance_attach

Is this thread/g_process properly attached to an Instance?

5.3.2.7 unsigned char QzStatus_S::qat_mem_drvr

1 if /dev/qat_mem exists 2 if /dev/qat_mem has been opened 0 otherwise

5.3.2.8 unsigned char QzStatus_S::qat_service_init

Check if the available services have been initialized

5.3.2.9 unsigned char QzStatus_S::using_huge_pages

Are memory slabs coming from huge pages?

The documentation for this struct was generated from the following file:

- [include/qatzip.h](#)

5.4 QzStream_S Struct Reference

```
#include <qatzip.h>
```

Public Attributes

- unsigned int [in_sz](#)
- unsigned int [out_sz](#)
- unsigned char * [in](#)
- unsigned char * [out](#)
- unsigned int [pending_in](#)
- unsigned int [pending_out](#)
- [QzCrcType_T](#) [crc_type](#)
- unsigned int [crc_32](#)
- unsigned long long [reserved](#)
- void * [opaque](#)

5.4.1 Detailed Description

QATzip Stream data storage

This structure contains metadata needed for stream operation.

5.4.2 Member Data Documentation

5.4.2.1 unsigned int QzStream_S::crc_32

Checksum value

5.4.2.2 QzCrcType_T QzStream_S::crc_type

Checksum type in Adler, CRC32 or none

5.4.2.3 unsigned char* QzStream_S::in

Input data pointer set by application

5.4.2.4 unsigned int QzStream_S::in_sz

Set by application, reset by QATzip to indicate consumed data

5.4.2.5 void* QzStream_S::opaque

Internal storage managed by QATzip

5.4.2.6 unsigned char* QzStream_S::out

Output data pointer set by application

5.4.2.7 unsigned int QzStream_S::out_sz

Set by application, reset by QATzip to indicate processed data

5.4.2.8 unsigned int QzStream_S::pending_in

Unprocessed bytes held in QATzip

5.4.2.9 unsigned int QzStream_S::pending_out

Processed bytes held in QATzip

5.4.2.10 unsigned long long QzStream_S::reserved

Reserved for future use

The documentation for this struct was generated from the following file:

- [include/qatzip.h](#)

Chapter 6

File Documentation

6.1 include/qatzip.h File Reference

```
#include <string.h>
#include <stdbool.h>
#include <stdint.h>
#include <cpa_dc.h>
```

Classes

- struct [QzSessionParams_S](#)
- struct [QzSession_S](#)
- struct [QzStatus_S](#)
- struct [QzStream_S](#)

Macros

- #define [QATZIP_API_VERSION_NUM_MAJOR](#) (1)
- #define [QATZIP_API_VERSION_NUM_MINOR](#) (5)
- #define [QATZIP_API_VERSION](#)
- #define [QATZIP_API](#)
- #define [QZ_OK](#) (0)
- #define [QZ_DUPLICATE](#) (1)
- #define [QZ_FORCE_SW](#) (2)
- #define [QZ_PARAMS](#) (-1)
- #define [QZ_FAIL](#) (-2)
- #define [QZ_BUF_ERROR](#) (-3)
- #define [QZ_DATA_ERROR](#) (-4)
- #define [QZ_NO_HW](#) (11)
- #define [QZ_NO_MDRV](#) (12)
- #define [QZ_NO_INST_ATTACH](#) (13)
- #define [QZ_LOW_MEM](#) (14)
- #define [QZ_LOW_DEST_MEM](#) (15)
- #define [QZ_NONE](#) (100)
- #define [QZ_NOSW_NO_HW](#) (-101)
- #define [QZ_NOSW_NO_MDRV](#) (-102)
- #define [QZ_NOSW_NO_INST_ATTACH](#) (-103)
- #define [QZ_NOSW_LOW_MEM](#) (-104)

- `#define QZ_NO_SW_AVAIL (-105)`
- `#define QZ_MAX_ALGORITHMS ((int)255)`
- `#define QZ_DEFLATE ((unsigned char)8)`
- `#define MIN(a, b) (((a)<(b))? (a):(b))`
- `#define QZ_HUFF_HDR_DEFAULT QZ_DYNAMIC_HDR`
- `#define QZ_DIRECTION_DEFAULT QZ_DIR_BOTH`
- `#define QZ_DATA_FORMAT_DEFAULT QZ_DEFLATE_GZIP_EXT`
- `#define QZ_COMP_LEVEL_DEFAULT 1`
- `#define QZ_COMP_ALGOL_DEFAULT QZ_DEFLATE`
- `#define QZ_POLL_SLEEP_DEFAULT 10`
- `#define QZ_MAX_FORK_DEFAULT 3`
- `#define QZ_SW_BACKUP_DEFAULT 1`
- `#define QZ_HW_BUFF_SZ (64*1024)`
- `#define QZ_HW_BUFF_MIN_SZ (1*1024)`
- `#define QZ_HW_BUFF_MAX_SZ (512*1024)`
- `#define QZ_STRM_BUFF_SZ_DEFAULT QZ_HW_BUFF_SZ`
- `#define QZ_STRM_BUFF_MIN_SZ (1*1024)`
- `#define QZ_STRM_BUFF_MAX_SZ (2*1024*1024 - 5*1024)`
- `#define QZ_COMP_THRESHOLD_DEFAULT 1024`
- `#define QZ_COMP_THRESHOLD_MINIMUM 128`
- `#define QZ_REQ_THRESHOLD_MINIMUM 1`
- `#define QZ_REQ_THRESHOLD_MAXIMUM NUM_BUFF`
- `#define QZ_REQ_THRESHOLD_DEFAULT QZ_REQ_THRESHOLD_MAXIMUM`
- `#define QZ_WAIT_CNT_THRESHOLD_DEFAULT 8`
- `#define QZ_DEFLATE_COMP_LVL_MINIMUM (1)`
- `#define QZ_DEFLATE_COMP_LVL_MAXIMUM (9)`
- `#define QZ_PERIODICAL_POLLING (false)`
- `#define QZ_BUSY_POLLING (true)`
- `#define QZ_SW_EXECUTION_BIT (4)`
- `#define QZ_SW_EXECUTION_MASK (1 << QZ_SW_EXECUTION_BIT)`
- `#define QZ_SW_EXECUTION(ret, ext_rc) (!ret && (ext_rc & QZ_SW_EXECUTION_MASK))`
- `#define QZ_SKID_PAD_SZ 48`
- `#define QZ_COMPRESSED_SZ_OF_EMPTY_FILE 34`

Typedefs

- `typedef enum QzHuffmanHdr_E QzHuffmanHdr_T`
- `typedef enum PinMem_E PinMem_T`
- `typedef enum QzDirection_E QzDirection_T`
- `typedef enum QzDataFormat_E QzDataFormat_T`
- `typedef enum QzCrcType_E QzCrcType_T`
- `typedef struct QzSessionParams_S QzSessionParams_T`
- `typedef struct QzSession_S QzSession_T`
- `typedef struct QzStatus_S QzStatus_T`
- `typedef struct QzStream_S QzStream_T`

Enumerations

- `enum QzHuffmanHdr_E { QZ_DYNAMIC_HDR = 0, QZ_STATIC_HDR }`
- `enum PinMem_E { COMMON_MEM = 0, PINNED_MEM }`
- `enum QzDirection_E { QZ_DIR_COMPRESS = 0, QZ_DIR_DECOMPRESS, QZ_DIR_BOTH }`
- `enum QzDataFormat_E { QZ_DEFLATE_4B = 0, QZ_DEFLATE_GZIP, QZ_DEFLATE_GZIP_EXT, QZ_DEFLATE_RAW, QZ_FMT_NUM }`
- `enum QzCrcType_E { QZ_CRC32 = 0, QZ_ADLER, NONE }`

Functions

- [QATZIP_API](#) int [qzInit](#) ([QzSession_T](#) *sess, unsigned char sw_backup)
- [QATZIP_API](#) int [qzSetupSession](#) ([QzSession_T](#) *sess, [QzSessionParams_T](#) *params)
- [QATZIP_API](#) int [qzCompress](#) ([QzSession_T](#) *sess, const unsigned char *src, unsigned int *src_len, unsigned char *dest, unsigned int *dest_len, unsigned int last)
- [QATZIP_API](#) int [qzCompressExt](#) ([QzSession_T](#) *sess, const unsigned char *src, unsigned int *src_len, unsigned char *dest, unsigned int *dest_len, unsigned int last, uint64_t *ext_rc)
- [QATZIP_API](#) int [qzCompressCrc](#) ([QzSession_T](#) *sess, const unsigned char *src, unsigned int *src_len, unsigned char *dest, unsigned int *dest_len, unsigned int last, unsigned long *crc)
- [QATZIP_API](#) int [qzCompressCrcExt](#) ([QzSession_T](#) *sess, const unsigned char *src, unsigned int *src_len, unsigned char *dest, unsigned int *dest_len, unsigned int last, unsigned long *crc, uint64_t *ext_rc)
- [QATZIP_API](#) int [qzDecompress](#) ([QzSession_T](#) *sess, const unsigned char *src, unsigned int *src_len, unsigned char *dest, unsigned int *dest_len)
- [QATZIP_API](#) int [qzDecompressExt](#) ([QzSession_T](#) *sess, const unsigned char *src, unsigned int *src_len, unsigned char *dest, unsigned int *dest_len, uint64_t *ext_rc)
- [QATZIP_API](#) int [qzTeardownSession](#) ([QzSession_T](#) *sess)
- [QATZIP_API](#) int [qzClose](#) ([QzSession_T](#) *sess)
- [QATZIP_API](#) int [qzGetStatus](#) ([QzSession_T](#) *sess, [QzStatus_T](#) *status)
- [QATZIP_API](#) unsigned int [qzMaxCompressedLength](#) (unsigned int src_sz, [QzSession_T](#) *sess)
- [QATZIP_API](#) int [qzSetDefaults](#) ([QzSessionParams_T](#) *defaults)
- [QATZIP_API](#) int [qzGetDefaults](#) ([QzSessionParams_T](#) *defaults)
- [QATZIP_API](#) void * [qzMalloc](#) (size_t sz, int numa, int force_pinned)
- [QATZIP_API](#) void [qzFree](#) (void *m)
- [QATZIP_API](#) int [qzMemFindAddr](#) (unsigned char *a)
- [QATZIP_API](#) int [qzCompressStream](#) ([QzSession_T](#) *sess, [QzStream_T](#) *strm, unsigned int last)
- [QATZIP_API](#) int [qzDecompressStream](#) ([QzSession_T](#) *sess, [QzStream_T](#) *strm, unsigned int last)
- [QATZIP_API](#) int [qzEndStream](#) ([QzSession_T](#) *sess, [QzStream_T](#) *strm)

6.1.1 Macro Definition Documentation

6.1.1.1 `#define MIN(a, b) (((a)<(b))?(a):(b))`

6.1.1.2 `#define QATZIP_API`

These macros define how the project will be built `QATZIP_LINK_DLL` must be defined if linking the DLL `QATZIP_BUILD_DLL` must be defined when building a DLL No definition required if building the project as static library

6.1.1.3 `#define QATZIP_API_VERSION`

Value:

```
(QATZIP_API_VERSION_NUM_MAJOR * 10000 +
    QATZIP_API_VERSION_NUM_MINOR
    * 100)
```

6.1.1.4 `#define QZ_BUF_ERROR (-3)`

Insufficient buffer error

6.1.1.5 `#define QZ_BUSY_POLLING (true)`

6.1.1.6 `#define QZ_COMP_ALGOL_DEFAULT QZ_DEFLATE`

6.1.1.7 `#define QZ_COMP_LEVEL_DEFAULT 1`

6.1.1.8 `#define QZ_COMP_THRESHOLD_DEFAULT 1024`

6.1.1.9 `#define QZ_COMP_THRESHOLD_MINIMUM 128`

6.1.1.10 `#define QZ_COMPRESSED_SZ_OF_EMPTY_FILE 34`

6.1.1.11 `#define QZ_DATA_ERROR (-4)`

Input data was corrupted

6.1.1.12 `#define QZ_DATA_FORMAT_DEFAULT QZ_DEFLATE_GZIP_EXT`

6.1.1.13 `#define QZ_DEFLATE ((unsigned char)8)`

6.1.1.14 `#define QZ_DEFLATE_COMP_LVL_MAXIMUM (9)`

6.1.1.15 `#define QZ_DEFLATE_COMP_LVL_MINIMUM (1)`

6.1.1.16 `#define QZ_DIRECTION_DEFAULT QZ_DIR_BOTH`

6.1.1.17 `#define QZ_DUPLICATE (1)`

Can not process function again. No failure

6.1.1.18 `#define QZ_FAIL (-2)`

Unspecified error

6.1.1.19 `#define QZ_FORCE_SW (2)`

Using SW: Switch to software because of previous block

6.1.1.20 `#define QZ_HUFF_HDR_DEFAULT QZ_DYNAMIC_HDR`

6.1.1.21 `#define QZ_HW_BUFF_MAX_SZ (512*1024)`

6.1.1.22 `#define QZ_HW_BUFF_MIN_SZ (1*1024)`

6.1.1.23 `#define QZ_HW_BUFF_SZ (64*1024)`

6.1.1.24 `#define QZ_LOW_DEST_MEM (15)`

Using SW: Not enough pinned memory for dest buffer

6.1.1.25 `#define QZ_LOW_MEM (14)`

Using SW: Not enough pinned memory

6.1.1.26 `#define QZ_MAX_ALGORITHMS ((int)255)`

6.1.1.27 `#define QZ_MAX_FORK_DEFAULT 3`

6.1.1.28 `#define QZ_NO_HW (11)`

Using SW: No QAT HW detected

6.1.1.29 `#define QZ_NO_INST_ATTACH (13)`

Using SW: Could not attach to an instance

6.1.1.30 `#define QZ_NO_MDRV (12)`

Using SW: No memory driver detected

6.1.1.31 `#define QZ_NO_SW_AVAIL (-105)`

Session may require software, but no software is available

6.1.1.32 `#define QZ_NONE (100)`

Device uninitialized

6.1.1.33 `#define QZ_NOSW_LOW_MEM (-104)`

Not using SW: not enough pinned memory

6.1.1.34 `#define QZ_NOSW_NO_HW (-101)`

Not using SW: No QAT HW detected

6.1.1.35 `#define QZ_NOSW_NO_INST_ATTACH (-103)`

Not using SW: Could not attach to instance

6.1.1.36 `#define QZ_NOSW_NO_MDRV (-102)`

Not using SW: No memory driver detected

6.1.1.37 `#define QZ_PARAMS (-1)`

Invalid parameter in function call

6.1.1.38 `#define QZ_PERIODICAL_POLLING (false)`

6.1.1.39 `#define QZ_POLL_SLEEP_DEFAULT 10`

6.1.1.40 `#define QZ_REQ_THRESHOLD_DEFAULT QZ_REQ_THRESHOLD_MAXIMUM`

6.1.1.41 `#define QZ_REQ_THRESHOLD_MAXIMUM NUM_BUFF`

6.1.1.42 `#define QZ_REQ_THRESHOLD_MINIMUM 1`

6.1.1.43 `#define QZ_STRM_BUFF_MAX_SZ (2*1024*1024 - 5*1024)`

6.1.1.44 `#define QZ_STRM_BUFF_MIN_SZ (1*1024)`

6.1.1.45 `#define QZ_STRM_BUFF_SZ_DEFAULT QZ_HW_BUFF_SZ`

6.1.1.46 `#define QZ_SW_BACKUP_DEFAULT 1`

6.1.1.47 `#define QZ_SW_EXECUTION(ret, ext_rc) (!ret && (ext_rc & QZ_SW_EXECUTION_MASK))`

6.1.1.48 `#define QZ_SW_EXECUTION_MASK (1 << QZ_SW_EXECUTION_BIT)`

6.1.1.49 `#define QZ_WAIT_CNT_THRESHOLD_DEFAULT 8`

6.1.2 Function Documentation

6.1.2.1 **QATZIP_API** `int qzCompressCrcExt (QzSession_T * sess, const unsigned char * src, unsigned int * src_len, unsigned char * dest, unsigned int * dest_len, unsigned int last, unsigned long * crc, uint64_t * ext_rc)`

6.1.2.2 **QATZIP_API** `int qzCompressExt (QzSession_T * sess, const unsigned char * src, unsigned int * src_len, unsigned char * dest, unsigned int * dest_len, unsigned int last, uint64_t * ext_rc)`

6.1.2.3 **QATZIP_API** `int qzDecompressExt (QzSession_T * sess, const unsigned char * src, unsigned int * src_len, unsigned char * dest, unsigned int * dest_len, uint64_t * ext_rc)`

6.1.2.4 **QATZIP_API** `unsigned int qzMaxCompressedLength (unsigned int src_sz, QzSession_T * sess)`

Index

- algo_hw
 - QzStatus_S, 30
- algo_sw
 - QzStatus_S, 30
- COMMON_MEM
 - Data Compression API, 11
- comp_algorithm
 - QzSessionParams_S, 28
- comp_lvl
 - QzSessionParams_S, 28
- crc_32
 - QzStream_S, 31
- crc_type
 - QzStream_S, 31
- Data Compression API
 - COMMON_MEM, 11
 - NONE, 11
 - PINNED_MEM, 11
 - QZ_ADLER, 11
 - QZ_CRC32, 11
 - QZ_DEFLATE_4B, 11
 - QZ_DEFLATE_GZIP, 11
 - QZ_DEFLATE_GZIP_EXT, 12
 - QZ_DEFLATE_RAW, 12
 - QZ_DIR_BOTH, 12
 - QZ_DIR_COMPRESS, 12
 - QZ_DIR_DECOMPRESS, 12
 - QZ_DYNAMIC_HDR, 13
 - QZ_FMT_NUM, 12
 - QZ_STATIC_HDR, 13
- Data Compression API, 7
 - PinMem_E, 11
 - PinMem_T, 9
 - QZ_OK, 8
 - QZ_SKID_PAD_SZ, 8
 - qzClose, 13
 - qzCompress, 13
 - qzCompressCrc, 14
 - qzCompressStream, 15
 - QzCrcType_E, 11
 - QzCrcType_T, 9
 - QzDataFormat_E, 11
 - QzDataFormat_T, 9
 - qzDecompress, 16
 - qzDecompressStream, 17
 - QzDirection_E, 12
 - QzDirection_T, 10
 - qzEndStream, 18
 - qzFree, 18
 - qzGetDefaults, 19
 - qzGetStatus, 19
 - QzHuffmanHdr_E, 12
 - QzHuffmanHdr_T, 10
 - qzInit, 21
 - qzMalloc, 21
 - qzMemFindAddr, 22
 - QzSession_T, 10
 - QzSessionParams_T, 10
 - qzSetDefaults, 23
 - qzSetupSession, 23
 - QzStatus_T, 11
 - QzStream_T, 11
 - qzTeardownSession, 24
- data_fmt
 - QzSessionParams_S, 28
- direction
 - QzSessionParams_S, 28
- huffman_hdr
 - QzSessionParams_S, 28
- hw_buff_sz
 - QzSessionParams_S, 29
- hw_session_stat
 - QzSession_S, 27
- hw_session_status
 - QzStatus_S, 30
- in
 - QzStream_S, 31
- in_sz
 - QzStream_S, 31
- include/qatzip.h, 33
- input_sz_threshold
 - QzSessionParams_S, 29
- internal
 - QzSession_S, 27
- is_busy_polling
 - QzSessionParams_S, 29
- MIN
 - qatzip.h, 35
- max_forks
 - QzSessionParams_S, 29
- memory_allocated
 - QzStatus_S, 30
- NONE
 - Data Compression API, 11

- opaque
 - QzStream_S, [31](#)
- out
 - QzStream_S, [32](#)
- out_sz
 - QzStream_S, [32](#)
- PINNED_MEM
 - Data Compression API, [11](#)
- pending_in
 - QzStream_S, [32](#)
- pending_out
 - QzStream_S, [32](#)
- PinMem_E
 - Data Compression API, [11](#)
- PinMem_T
 - Data Compression API, [9](#)
- QZ_ADLER
 - Data Compression API, [11](#)
- QZ_CRC32
 - Data Compression API, [11](#)
- QZ_DEFLATE_4B
 - Data Compression API, [11](#)
- QZ_DEFLATE_GZIP
 - Data Compression API, [11](#)
- QZ_DEFLATE_GZIP_EXT
 - Data Compression API, [12](#)
- QZ_DEFLATE_RAW
 - Data Compression API, [12](#)
- QZ_DIR_BOTH
 - Data Compression API, [12](#)
- QZ_DIR_COMPRESS
 - Data Compression API, [12](#)
- QZ_DIR_DECOMPRESS
 - Data Compression API, [12](#)
- QZ_DYNAMIC_HDR
 - Data Compression API, [13](#)
- QZ_FMT_NUM
 - Data Compression API, [12](#)
- QZ_STATIC_HDR
 - Data Compression API, [13](#)
- QATZIP_API
 - qatzip.h, [35](#)
- QATZIP_API_VERSION
 - qatzip.h, [35](#)
- QZ_BUF_ERROR
 - qatzip.h, [35](#)
- QZ_BUSY_POLLING
 - qatzip.h, [35](#)
- QZ_DATA_ERROR
 - qatzip.h, [36](#)
- QZ_DEFLATE
 - qatzip.h, [36](#)
- QZ_DIRECTION_DEFAULT
 - qatzip.h, [36](#)
- QZ_DUPLICATE
 - qatzip.h, [36](#)
- QZ_FAIL
 - qatzip.h, [36](#)
- QZ_FORCE_SW
 - qatzip.h, [36](#)
- QZ_HUFF_HDR_DEFAULT
 - qatzip.h, [36](#)
- QZ_HW_BUFF_MAX_SZ
 - qatzip.h, [36](#)
- QZ_HW_BUFF_MIN_SZ
 - qatzip.h, [36](#)
- QZ_HW_BUFF_SZ
 - qatzip.h, [36](#)
- QZ_LOW_DEST_MEM
 - qatzip.h, [36](#)
- QZ_LOW_MEM
 - qatzip.h, [36](#)
- QZ_MAX_ALGORITHMS
 - qatzip.h, [36](#)
- QZ_MAX_FORK_DEFAULT
 - qatzip.h, [37](#)
- QZ_NO_HW
 - qatzip.h, [37](#)
- QZ_NO_INST_ATTACH
 - qatzip.h, [37](#)
- QZ_NO_MDRV
 - qatzip.h, [37](#)
- QZ_NO_SW_AVAIL
 - qatzip.h, [37](#)
- QZ_NONE
 - qatzip.h, [37](#)
- QZ_NOSW_LOW_MEM
 - qatzip.h, [37](#)
- QZ_NOSW_NO_HW
 - qatzip.h, [37](#)
- QZ_NOSW_NO_MDRV
 - qatzip.h, [37](#)
- QZ_OK
 - Data Compression API, [8](#)
- QZ_PARAMS
 - qatzip.h, [37](#)
- QZ_SKID_PAD_SZ
 - Data Compression API, [8](#)
- QZ_SW_EXECUTION
 - qatzip.h, [38](#)
- qat_hw_count
 - QzStatus_S, [30](#)
- qat_instance_attach
 - QzStatus_S, [30](#)
- qat_mem_drvr
 - QzStatus_S, [30](#)
- qat_service_init
 - QzStatus_S, [30](#)
- qatzip.h
 - MIN, [35](#)
 - QATZIP_API, [35](#)
 - QATZIP_API_VERSION, [35](#)
 - QZ_BUF_ERROR, [35](#)
 - QZ_BUSY_POLLING, [35](#)
 - QZ_DATA_ERROR, [36](#)

- QZ_DEFLATE, [36](#)
- QZ_DUPLICATE, [36](#)
- QZ_FAIL, [36](#)
- QZ_FORCE_SW, [36](#)
- QZ_HW_BUFF_MAX_SZ, [36](#)
- QZ_HW_BUFF_MIN_SZ, [36](#)
- QZ_HW_BUFF_SZ, [36](#)
- QZ_LOW_DEST_MEM, [36](#)
- QZ_LOW_MEM, [36](#)
- QZ_MAX_ALGORITHMS, [36](#)
- QZ_NO_HW, [37](#)
- QZ_NO_INST_ATTACH, [37](#)
- QZ_NO_MDRV, [37](#)
- QZ_NO_SW_AVAIL, [37](#)
- QZ_NONE, [37](#)
- QZ_NOSW_LOW_MEM, [37](#)
- QZ_NOSW_NO_HW, [37](#)
- QZ_NOSW_NO_MDRV, [37](#)
- QZ_PARAMS, [37](#)
- QZ_SW_EXECUTION, [38](#)
- qzCompressCrcExt, [38](#)
- qzCompressExt, [38](#)
- qzDecompressExt, [38](#)
- qzMaxCompressedLength, [38](#)
- qzClose
 - Data Compression API, [13](#)
- qzCompress
 - Data Compression API, [13](#)
- qzCompressCrc
 - Data Compression API, [14](#)
- qzCompressCrcExt
 - qatzip.h, [38](#)
- qzCompressExt
 - qatzip.h, [38](#)
- qzCompressStream
 - Data Compression API, [15](#)
- QzCrcType_E
 - Data Compression API, [11](#)
- QzCrcType_T
 - Data Compression API, [9](#)
- QzDataFormat_E
 - Data Compression API, [11](#)
- QzDataFormat_T
 - Data Compression API, [9](#)
- qzDecompress
 - Data Compression API, [16](#)
- qzDecompressExt
 - qatzip.h, [38](#)
- qzDecompressStream
 - Data Compression API, [17](#)
- QzDirection_E
 - Data Compression API, [12](#)
- QzDirection_T
 - Data Compression API, [10](#)
- qzEndStream
 - Data Compression API, [18](#)
- qzFree
 - Data Compression API, [18](#)
- qzGetDefaults
 - Data Compression API, [19](#)
- qzGetStatus
 - Data Compression API, [19](#)
- QzHuffmanHdr_E
 - Data Compression API, [12](#)
- QzHuffmanHdr_T
 - Data Compression API, [10](#)
- qzInit
 - Data Compression API, [21](#)
- qzMalloc
 - Data Compression API, [21](#)
- qzMaxCompressedLength
 - qatzip.h, [38](#)
- qzMemFindAddr
 - Data Compression API, [22](#)
- QzSession_S, [27](#)
 - hw_session_stat, [27](#)
 - internal, [27](#)
 - thd_sess_stat, [27](#)
 - total_in, [27](#)
 - total_out, [27](#)
- QzSession_T
 - Data Compression API, [10](#)
- QzSessionParams_S, [28](#)
 - comp_algorithm, [28](#)
 - comp_lvl, [28](#)
 - data_fmt, [28](#)
 - direction, [28](#)
 - huffman_hdr, [28](#)
 - hw_buff_sz, [29](#)
 - input_sz_thrshold, [29](#)
 - is_busy_polling, [29](#)
 - max_forks, [29](#)
 - req_cnt_thrshold, [29](#)
 - strm_buff_sz, [29](#)
 - sw_backup, [29](#)
 - wait_cnt_thrshold, [29](#)
- QzSessionParams_T
 - Data Compression API, [10](#)
- qzSetDefaults
 - Data Compression API, [23](#)
- qzSetupSession
 - Data Compression API, [23](#)
- QzStatus_S, [29](#)
 - algo_hw, [30](#)
 - algo_sw, [30](#)
 - hw_session_status, [30](#)
 - memory_allocated, [30](#)
 - qat_hw_count, [30](#)
 - qat_instance_attach, [30](#)
 - qat_mem_drvr, [30](#)
 - qat_service_init, [30](#)
 - using_huge_pages, [30](#)
- QzStatus_T
 - Data Compression API, [11](#)
- QzStream_S, [31](#)
 - crc_32, [31](#)

- crc_type, [31](#)
- in, [31](#)
- in_sz, [31](#)
- opaque, [31](#)
- out, [32](#)
- out_sz, [32](#)
- pending_in, [32](#)
- pending_out, [32](#)
- reserved, [32](#)
- QzStream_T
 - Data Compression API, [11](#)
- qzTeardownSession
 - Data Compression API, [24](#)
- req_cnt_thrshold
 - QzSessionParams_S, [29](#)
- reserved
 - QzStream_S, [32](#)
- strm_buff_sz
 - QzSessionParams_S, [29](#)
- sw_backup
 - QzSessionParams_S, [29](#)
- thd_sess_stat
 - QzSession_S, [27](#)
- total_in
 - QzSession_S, [27](#)
- total_out
 - QzSession_S, [27](#)
- using_huge_pages
 - QzStatus_S, [30](#)
- wait_cnt_thrshold
 - QzSessionParams_S, [29](#)