

**NAME**

ASN1\_INTEGER\_get\_uint64, ASN1\_INTEGER\_set\_uint64, ASN1\_INTEGER\_get\_int64, ASN1\_INTEGER\_get, ASN1\_INTEGER\_set\_int64, ASN1\_INTEGER\_set, BN\_to\_ASN1\_INTEGER, ASN1\_INTEGER\_to\_BN, ASN1\_ENUMERATED\_get\_int64, ASN1\_ENUMERATED\_get, ASN1\_ENUMERATED\_set\_int64, ASN1\_ENUMERATED\_set, BN\_to\_ASN1\_ENUMERATED, ASN1\_ENUMERATED\_to\_BN - ASN.1 INTEGER and ENUMERATED utilities

**SYNOPSIS**

```
#include <openssl/asn1.h>
```

```
int ASN1_INTEGER_get_int64(int64_t *pr, const ASN1_INTEGER *a);
```

```
long ASN1_INTEGER_get(const ASN1_INTEGER *a);
```

```
int ASN1_INTEGER_set_int64(ASN1_INTEGER *a, int64_t r);
```

```
int ASN1_INTEGER_set(ASN1_INTEGER *a, long v);
```

```
int ASN1_INTEGER_get_uint64(uint64_t *pr, const ASN1_INTEGER *a);
```

```
int ASN1_INTEGER_set_uint64(ASN1_INTEGER *a, uint64_t r);
```

```
ASN1_INTEGER *BN_to_ASN1_INTEGER(const BIGNUM *bn, ASN1_INTEGER *ai);
```

```
BIGNUM *ASN1_INTEGER_to_BN(const ASN1_INTEGER *ai, BIGNUM *bn);
```

```
int ASN1_ENUMERATED_get_int64(int64_t *pr, const ASN1_ENUMERATED *a);
```

```
long ASN1_ENUMERATED_get(const ASN1_ENUMERATED *a);
```

```
int ASN1_ENUMERATED_set_int64(ASN1_ENUMERATED *a, int64_t r);
```

```
int ASN1_ENUMERATED_set(ASN1_ENUMERATED *a, long v);
```

```
ASN1_ENUMERATED *BN_to_ASN1_ENUMERATED(const BIGNUM *bn, ASN1_ENUMERATED *ai);
```

```
BIGNUM *ASN1_ENUMERATED_to_BN(const ASN1_ENUMERATED *ai, BIGNUM *bn);
```

**DESCRIPTION**

These functions convert to and from **ASN1\_INTEGER** and **ASN1\_ENUMERATED** structures.

**ASN1\_INTEGER\_get\_int64()** converts an **ASN1\_INTEGER** into an **int64\_t** type. If successful it returns 1 and sets *pr* to the value of *a*. If it fails (due to invalid type or the value being too big to fit into an **int64\_t** type) it returns 0.

**ASN1\_INTEGER\_get\_uint64()** is similar to **ASN1\_INTEGER\_get\_int64\_t()** except it converts to a **uint64\_t** type and an error is returned if the passed integer is negative.

**ASN1\_INTEGER\_get()** also returns the value of *a* but it returns 0 if *a* is NULL and -1 on error (which is ambiguous because -1 is a legitimate value for an **ASN1\_INTEGER**). New applications should use **ASN1\_INTEGER\_get\_int64()** instead.

**ASN1\_INTEGER\_set\_int64()** sets the value of **ASN1\_INTEGER** *a* to the **int64\_t** value *r*.

**ASN1\_INTEGER\_set\_uint64()** sets the value of **ASN1\_INTEGER** *a* to the **uint64\_t** value *r*.

**ASN1\_INTEGER\_set()** sets the value of **ASN1\_INTEGER** *a* to the *long* value *v*.

**BN\_to\_ASN1\_INTEGER()** converts **BIGNUM** *bn* to an **ASN1\_INTEGER**. If *ai* is NULL a new **ASN1\_INTEGER** structure is returned. If *ai* is not NULL then the existing structure will be used instead.

**ASN1\_INTEGER\_to\_BN()** converts **ASN1\_INTEGER** *ai* into a **BIGNUM**. If *bn* is NULL a new **BIGNUM** structure is returned. If *bn* is not NULL then the existing structure will be used instead.

**ASN1\_ENUMERATED\_get\_int64()**, **ASN1\_ENUMERATED\_set\_int64()**, **ASN1\_ENUMERATED\_set()**, **BN\_to\_ASN1\_ENUMERATED()** and **ASN1\_ENUMERATED\_to\_BN()** behave in an identical way to their **ASN1\_INTEGER** counterparts except they operate on an **ASN1\_ENUMERATED** value.

**ASN1\_ENUMERATED\_get()** returns the value of *a* in a similar way to **ASN1\_INTEGER\_get()** but it returns **0xffffffffL** if the value of *a* will not fit in a long type. New applications should use **ASN1\_ENUMERATED\_get\_int64()** instead.

## NOTES

In general an **ASN1\_INTEGER** or **ASN1\_ENUMERATED** type can contain an integer of almost arbitrary size and so cannot always be represented by a C **int64\_t** type. However, in many cases (for example version numbers) they represent small integers which can be more easily manipulated if converted to an appropriate C integer type.

## BUGS

The ambiguous return values of **ASN1\_INTEGER\_get()** and **ASN1\_ENUMERATED\_get()** mean these functions should be avoided if possible. They are retained for compatibility. Normally the ambiguous return values are not legitimate values for the fields they represent.

## RETURN VALUES

**ASN1\_INTEGER\_set\_int64()**, **ASN1\_INTEGER\_set()**, **ASN1\_ENUMERATED\_set\_int64()** and **ASN1\_ENUMERATED\_set()** return 1 for success and 0 for failure. They will only fail if a memory

allocation error occurs.

**ASN1\_INTEGER\_get\_int64()** and **ASN1\_ENUMERATED\_get\_int64()** return 1 for success and 0 for failure. They will fail if the passed type is incorrect (this will only happen if there is a programming error) or if the value exceeds the range of an **int64\_t** type.

**BN\_to\_ASN1\_INTEGER()** and **BN\_to\_ASN1\_ENUMERATED()** return an **ASN1\_INTEGER** or **ASN1\_ENUMERATED** structure respectively or NULL if an error occurs. They will only fail due to a memory allocation error.

**ASN1\_INTEGER\_to\_BN()** and **ASN1\_ENUMERATED\_to\_BN()** return a **BIGNUM** structure of NULL if an error occurs. They can fail if the passed type is incorrect (due to programming error) or due to a memory allocation failure.

## SEE ALSO

**ERR\_get\_error(3)**

## HISTORY

**ASN1\_INTEGER\_set\_int64()**, **ASN1\_INTEGER\_get\_int64()**, **ASN1\_ENUMERATED\_set\_int64()** and **ASN1\_ENUMERATED\_get\_int64()** were added in OpenSSL 1.1.0.

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