

**NAME**

ASN1\_STRING\_dup, ASN1\_STRING\_cmp, ASN1\_STRING\_set, ASN1\_STRING\_length, ASN1\_STRING\_type, ASN1\_STRING\_get0\_data, ASN1\_STRING\_data, ASN1\_STRING\_to\_UTF8 - ASN1\_STRING utility functions

**SYNOPSIS**

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

```
int ASN1_STRING_length(ASN1_STRING *x);
```

```
const unsigned char *ASN1_STRING_get0_data(const ASN1_STRING *x);
```

```
unsigned char *ASN1_STRING_data(ASN1_STRING *x);
```

```
ASN1_STRING *ASN1_STRING_dup(const ASN1_STRING *a);
```

```
int ASN1_STRING_cmp(ASN1_STRING *a, ASN1_STRING *b);
```

```
int ASN1_STRING_set(ASN1_STRING *str, const void *data, int len);
```

```
int ASN1_STRING_type(const ASN1_STRING *x);
```

```
int ASN1_STRING_to_UTF8(unsigned char **out, const ASN1_STRING *in);
```

**DESCRIPTION**

These functions allow an **ASN1\_STRING** structure to be manipulated.

**ASN1\_STRING\_length()** returns the length of the content of *x*.

**ASN1\_STRING\_get0\_data()** returns an internal pointer to the data of *x*. Since this is an internal pointer it should **not** be freed or modified in any way.

**ASN1\_STRING\_data()** is similar to **ASN1\_STRING\_get0\_data()** except the returned value is not constant. This function is deprecated: applications should use **ASN1\_STRING\_get0\_data()** instead.

**ASN1\_STRING\_dup()** returns a copy of the structure *a*.

**ASN1\_STRING\_cmp()** compares *a* and *b* returning 0 if the two are identical. The string types and content are compared.

**ASN1\_STRING\_set()** sets the data of string *str* to the buffer *data* or length *len*. The supplied data is copied. If *len* is -1 then the length is determined by `strlen(data)`.

**ASN1\_STRING\_type()** returns the type of *x*, using standard constants such as **V\_ASN1\_OCTET\_STRING**.

**ASN1\_STRING\_to\_UTF8()** converts the string *in* to UTF8 format, the converted data is allocated in a buffer in *\*out*. The length of *out* is returned or a negative error code. The buffer *\*out* should be freed using **OPENSSL\_free()**.

## NOTES

Almost all ASN1 types in OpenSSL are represented as an **ASN1\_STRING** structure. Other types such as **ASN1\_OCTET\_STRING** are simply typedef'ed to **ASN1\_STRING** and the functions call the **ASN1\_STRING** equivalents. **ASN1\_STRING** is also used for some **CHOICE** types which consist entirely of primitive string types such as **DirectoryString** and **Time**.

These functions should **not** be used to examine or modify **ASN1\_INTEGER** or **ASN1\_ENUMERATED** types: the relevant **INTEGER** or **ENUMERATED** utility functions should be used instead.

In general it cannot be assumed that the data returned by **ASN1\_STRING\_data()** is null terminated or does not contain embedded nulls. The actual format of the data will depend on the actual string type itself: for example for an IA5String the data will be ASCII, for a BMPString two bytes per character in big endian format, and for a UTF8String it will be in UTF8 format.

Similar care should be take to ensure the data is in the correct format when calling **ASN1\_STRING\_set()**.

## RETURN VALUES

**ASN1\_STRING\_length()** returns the length of the content of *x*.

**ASN1\_STRING\_get0\_data()** and **ASN1\_STRING\_data()** return an internal pointer to the data of *x*.

**ASN1\_STRING\_dup()** returns a valid **ASN1\_STRING** structure or NULL if an error occurred.

**ASN1\_STRING\_cmp()** returns an integer greater than, equal to, or less than 0, according to whether *a* is greater than, equal to, or less than *b*.

**ASN1\_STRING\_set()** returns 1 on success or 0 on error.

**ASN1\_STRING\_type()** returns the type of *x*.

**ASN1\_STRING\_to\_UTF8()** returns the number of bytes in output string *out* or a negative value if an

error occurred.

**SEE ALSO**

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

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