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## **Red Hat Enterprise Linux Release 9.2 Manual Pages on 'ASN1\_AUX.3oss1' command**

**\$ man ASN1\_AUX.3oss1**

ASN1\_AUX\_CB(3oss1)          OpenSSL          ASN1\_AUX\_CB(3oss1)

### NAME

ASN1\_AUX, ASN1\_PRINT\_ARG, ASN1\_STREAM\_ARG, ASN1\_aux\_cb,  
ASN1\_aux\_const\_cb - ASN.1 auxilliary data

### SYNOPSIS

```
#include <openssl/asn1t.h>
```

```
struct ASN1_AUX_st {  
    void *app_data;  
  
    int flags;  
  
    int ref_offset;          /* Offset of reference value */  
  
    int ref_lock;          /* Offset to an CRYPTO_RWLOCK */  
  
    ASN1_aux_cb *asn1_cb;  
  
    int enc_offset;          /* Offset of ASN1_ENCODING structure */  
  
    ASN1_aux_const_cb *asn1_const_cb; /* for ASN1_OP_I2D_ and ASN1_OP_PRINT_ */  
};  
  
typedef struct ASN1_AUX_st ASN1_AUX;
```

```
struct ASN1_PRINT_ARG_st {  
    BIO *out;  
  
    int indent;
```

```

    const ASN1_PCTX *pctx;
};
typedef struct ASN1_PRINT_ARG_st ASN1_PRINT_ARG;

struct ASN1_STREAM_ARG_st {
    BIO *out;
    BIO *ndef_bio;
    unsigned char **boundary;
};
typedef struct ASN1_STREAM_ARG_st ASN1_STREAM_ARG;

typedef int ASN1_aux_cb(int operation, ASN1_VALUE **in, const ASN1_ITEM *it,
                        void *exarg);
typedef int ASN1_aux_const_cb(int operation, const ASN1_VALUE **in,
                              const ASN1_ITEM *it, void *exarg);

```

## DESCRIPTION

ASN.1 data structures can be associated with an ASN1\_AUX object to supply additional information about the ASN.1 structure. An ASN1\_AUX structure is associated with the structure during the definition of the ASN.1 template. For example an ASN1\_AUX structure will be associated by using one of the various ASN.1 template definition macros that supply auxilliary information such as ASN1\_SEQUENCE\_enc(), ASN1\_SEQUENCE\_ref(), ASN1\_SEQUENCE\_cb\_const\_cb(), ASN1\_SEQUENCE\_const\_cb(), ASN1\_SEQUENCE\_cb() or ASN1\_NDEF\_SEQUENCE\_cb().

An ASN1\_AUX structure contains the following information.

app\_data

Arbitrary application data

flags

Flags which indicate the auxiliary functionality supported.

The ASN1\_AFLG\_REFCOUNT flag indicates that objects support reference counting.

The ASN1\_AFLG\_ENCODING flag indicates that the original encoding of the object will be saved.

The ASN1\_AFLG\_BROKEN flag is a work around for broken encoders where the sequence length value may not be correct. This should generally not be used.

The ASN1\_AFLG\_CONST\_CB flag indicates that the "const" form of the ASN1\_AUX callback should be used in preference to the non-const form.

#### ref\_offset

If the ASN1\_AFLG\_REFCOUNT flag is set then this value is assumed to be an offset into the ASN1\_VALUE structure where a CRYPTO\_REF\_COUNT may be found for the purposes of reference counting.

#### ref\_lock

If the ASN1\_AFLG\_REFCOUNT flag is set then this value is assumed to be an offset into the ASN1\_VALUE structure where a CRYPTO\_RWLOCK may be found for the purposes of reference counting.

#### asn1\_cb

A callback that will be invoked at various points during the processing of the the ASN1\_VALLUE. See below for further details.

#### enc\_offset

Offset into the ASN1\_VALUE object where the original encoding of the object will be saved if the ASN1\_AFLG\_ENCODING flag has been

set.

#### asn1\_const\_cb

A callback that will be invoked at various points during the processing of the the ASN1\_VALUE. This is used in preference to the asn1\_cb callback if the ASN1\_AFLG\_CONST\_CB flag is set. See below for further details.

During the processing of an ASN1\_VALUE object the callbacks set via asn1\_cb or asn1\_const\_cb will be invoked as a result of various events indicated via the operation parameter. The value of \*in will be the ASN1\_VALUE object being processed based on the template in it. An additional operation specific parameter may be passed in exarg. The currently supported operations are as follows. The callbacks should return a positive value on success or zero on error, unless otherwise noted below.

#### ASN1\_OP\_NEW\_PRE

Invoked when processing a CHOICE, SEQUENCE or NDEF\_SEQUENCE structure prior to an ASN1\_VALUE object being allocated. The callback may allocate the ASN1\_VALUE itself and store it in \*pval. If it does so it should return 2 from the callback. On error it should return 0.

#### ASN1\_OP\_NEW\_POST

Invoked when processing a CHOICE, SEQUENCE or NDEF\_SEQUENCE structure after an ASN1\_VALUE object has been allocated. The allocated object is in \*pval.

#### ASN1\_OP\_FREE\_PRE

Invoked when processing a CHOICE, SEQUENCE or NDEF\_SEQUENCE structure immediately before an ASN1\_VALUE is freed. If the callback originally constructed the ASN1\_VALUE via ASN1\_OP\_NEW\_PRE

then it should free it at this point and return 2 from the  
callback. Otherwise it should return 1 for success or 0 on error.

#### ASN1\_OP\_FREE\_POST

Invoked when processing a CHOICE, SEQUENCE or NDEF\_SEQUENCE  
structure immediately after ASN1\_VALUE sub-structures are freed.

#### ASN1\_OP\_D2I\_PRE

Invoked when processing a CHOICE, SEQUENCE or NDEF\_SEQUENCE  
structure immediately before a "d2i" operation for the ASN1\_VALUE.

#### ASN1\_OP\_D2I\_POST

Invoked when processing a CHOICE, SEQUENCE or NDEF\_SEQUENCE  
structure immediately after a "d2i" operation for the ASN1\_VALUE.

#### ASN1\_OP\_I2D\_PRE

Invoked when processing a CHOICE, SEQUENCE or NDEF\_SEQUENCE  
structure immediately before a "i2d" operation for the ASN1\_VALUE.

#### ASN1\_OP\_I2D\_POST

Invoked when processing a CHOICE, SEQUENCE or NDEF\_SEQUENCE  
structure immediately after a "i2d" operation for the ASN1\_VALUE.

#### ASN1\_OP\_PRINT\_PRE

Invoked when processing a SEQUENCE or NDEF\_SEQUENCE structure  
immediately before printing the ASN1\_VALUE. The exarg argument will  
be a pointer to an ASN1\_PRINT\_ARG structure (see below).

#### ASN1\_OP\_PRINT\_POST

Invoked when processing a SEQUENCE or NDEF\_SEQUENCE structure  
immediately after printing the ASN1\_VALUE. The exarg argument will  
be a pointer to an ASN1\_PRINT\_ARG structure (see below).

#### ASN1\_OP\_STREAM\_PRE

Invoked immediately prior to streaming the ASN1\_VALUE data using indefinite length encoding. The exarg argument will be a pointer to a ASN1\_STREAM\_ARG structure (see below).

#### ASN1\_OP\_STREAM\_POST

Invoked immediately after streaming the ASN1\_VALUE data using indefinite length encoding. The exarg argument will be a pointer to a ASN1\_STREAM\_ARG structure (see below).

#### ASN1\_OP\_DETACHED\_PRE

Invoked immediately prior to processing the ASN1\_VALUE data as a "detached" value (as used in CMS and PKCS7). The exarg argument will be a pointer to a ASN1\_STREAM\_ARG structure (see below).

#### ASN1\_OP\_DETACHED\_POST

Invoked immediately after processing the ASN1\_VALUE data as a "detached" value (as used in CMS and PKCS7). The exarg argument will be a pointer to a ASN1\_STREAM\_ARG structure (see below).

#### ASN1\_OP\_DUP\_PRE

Invoked immediate prior to an ASN1\_VALUE being duplicated via a call to ASN1\_item\_dup().

#### ASN1\_OP\_DUP\_POST

Invoked immediate after to an ASN1\_VALUE has been duplicated via a call to ASN1\_item\_dup().

#### ASN1\_OP\_GET0\_LIBCTX

Invoked in order to obtain the OSSL\_LIB\_CTX associated with an ASN1\_VALUE if any. A pointer to an OSSL\_LIB\_CTX should be stored in \*exarg if such a value exists.

## ASN1\_OP\_GET0\_PROPQ

Invoked in order to obtain the property query string associated with an ASN1\_VALUE if any. A pointer to the property query string should be stored in \*exarg if such a value exists.

An ASN1\_PRINT\_ARG object is used during processing of ASN1\_OP\_PRINT\_PRE and ASN1\_OP\_PRINT\_POST callback operations. It contains the following information.

out The BIO being used to print the data out.

ndef\_bio

The current number of indent spaces that should be used for printing this data.

pctx

The context for the ASN1\_PCTX operation.

An ASN1\_STREAM\_ARG object is used during processing of ASN1\_OP\_STREAM\_PRE, ASN1\_OP\_STREAM\_POST, ASN1\_OP\_DETACHED\_PRE and ASN1\_OP\_DETACHED\_POST callback operations. It contains the following information.

out The BIO to stream through

ndef\_bio

The BIO with filters appended

boundary

The streaming I/O boundary.

## RETURN VALUES

The callbacks return 0 on error and a positive value on success. Some

operations require specific positive success values as noted above.

## SEE ALSO

ASN1\_item\_new\_ex(3)

## HISTORY

The ASN1\_aux\_const\_cb() callback and the ASN1\_OP\_GET0\_LIBCTX and ASN1\_OP\_GET0\_PROPQ operation types were added in OpenSSL 3.0.

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