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***Rocky Enterprise Linux 9.2 Manual Pages on command 'IMPLEMENT\_ASN1\_FUNCTIONS.3ossl'***

***\$ man IMPLEMENT\_ASN1\_FUNCTIONS.3ossl***

X509\_DUP(3ossl)                      OpenSSL                      X509\_DUP(3ossl)

NAME

DECLARE\_ASN1\_FUNCTIONS, IMPLEMENT\_ASN1\_FUNCTIONS, ASN1\_ITEM,  
ACCESS\_DESCRIPTION\_free, ACCESS\_DESCRIPTION\_new, ADMISSIONS\_free,  
ADMISSIONS\_new, ADMISSION\_SYNTAX\_free, ADMISSION\_SYNTAX\_new,  
ASIdOrRange\_free, ASIdOrRange\_new, ASIdentifierChoice\_free,  
ASIdentifierChoice\_new, ASIdentifiers\_free, ASIdentifiers\_new,  
ASRange\_free, ASRange\_new, AUTHORITY\_INFO\_ACCESS\_free,  
AUTHORITY\_INFO\_ACCESS\_new, AUTHORITY\_KEYID\_free, AUTHORITY\_KEYID\_new,  
BASIC\_CONSTRAINTS\_free, BASIC\_CONSTRAINTS\_new,  
CERTIFICATEPOLICIES\_free, CERTIFICATEPOLICIES\_new,  
CMS\_ContentInfo\_free, CMS\_ContentInfo\_new, CMS\_ContentInfo\_new\_ex,  
CMS\_ContentInfo\_print\_ctx, CMS\_ReceiptRequest\_free,  
CMS\_ReceiptRequest\_new, CRL\_DIST\_POINTS\_free, CRL\_DIST\_POINTS\_new,  
DIRECTORYSTRING\_free, DIRECTORYSTRING\_new, DISPLAYTEXT\_free,  
DISPLAYTEXT\_new, DIST\_POINT\_NAME\_free, DIST\_POINT\_NAME\_new,  
DIST\_POINT\_free, DIST\_POINT\_new, DSAParams\_dup, ECPARAMETERS\_free,

ECPARAMETERS\_new, ECPKPARAMETERS\_free, ECPKPARAMETERS\_new,  
EDIPARTYNAME\_free, EDIPARTYNAME\_new, ESS\_CERT\_ID\_dup, ESS\_CERT\_ID\_free,  
ESS\_CERT\_ID\_new, ESS\_CERT\_ID\_V2\_dup, ESS\_CERT\_ID\_V2\_free,  
ESS\_CERT\_ID\_V2\_new, ESS\_ISSUER\_SERIAL\_dup, ESS\_ISSUER\_SERIAL\_free,  
ESS\_ISSUER\_SERIAL\_new, ESS\_SIGNING\_CERT\_dup, ESS\_SIGNING\_CERT\_free,  
ESS\_SIGNING\_CERT\_it, ESS\_SIGNING\_CERT\_new, ESS\_SIGNING\_CERT\_V2\_dup,  
ESS\_SIGNING\_CERT\_V2\_free, ESS\_SIGNING\_CERT\_V2\_it,  
ESS\_SIGNING\_CERT\_V2\_new, EXTENDED\_KEY\_USAGE\_free,  
EXTENDED\_KEY\_USAGE\_new, GENERAL\_NAMES\_free, GENERAL\_NAMES\_new,  
GENERAL\_NAME\_dup, GENERAL\_NAME\_free, GENERAL\_NAME\_new,  
GENERAL\_SUBTREE\_free, GENERAL\_SUBTREE\_new, IPAddressChoice\_free,  
IPAddressChoice\_new, IPAddressFamily\_free, IPAddressFamily\_new,  
IPAddressOrRange\_free, IPAddressOrRange\_new, IPAddressRange\_free,  
IPAddressRange\_new, ISSUER\_SIGN\_TOOL\_free, ISSUER\_SIGN\_TOOL\_it,  
ISSUER\_SIGN\_TOOL\_new, ISSUING\_DIST\_POINT\_free, ISSUING\_DIST\_POINT\_it,  
ISSUING\_DIST\_POINT\_new, NAME\_CONSTRAINTS\_free, NAME\_CONSTRAINTS\_new,  
NAMING\_AUTHORITY\_free, NAMING\_AUTHORITY\_new,  
NETSCAPE\_CERT\_SEQUENCE\_free, NETSCAPE\_CERT\_SEQUENCE\_new,  
NETSCAPE\_SPKAC\_free, NETSCAPE\_SPKAC\_new, NETSCAPE\_SPKI\_free,  
NETSCAPE\_SPKI\_new, NOTICEREF\_free, NOTICEREF\_new, OCSP\_BASICRESP\_free,  
OCSP\_BASICRESP\_new, OCSP\_CERTID\_dup, OCSP\_CERTID\_new,  
OCSP\_CERTSTATUS\_free, OCSP\_CERTSTATUS\_new, OCSP\_CRLID\_free,  
OCSP\_CRLID\_new, OCSP\_ONEREQ\_free, OCSP\_ONEREQ\_new, OCSP\_REQINFO\_free,  
OCSP\_REQINFO\_new, OCSP\_RESPBYTES\_free, OCSP\_RESPBYTES\_new,  
OCSP\_RESPDATA\_free, OCSP\_RESPDATA\_new, OCSP\_RESPID\_free,  
OCSP\_RESPID\_new, OCSP\_RESPONSE\_new, OCSP\_REVOKEDINFO\_free,  
OCSP\_REVOKEDINFO\_new, OCSP\_SERVICELOC\_free, OCSP\_SERVICELOC\_new,  
OCSP\_SIGNATURE\_free, OCSP\_SIGNATURE\_new, OCSP\_SINGLERESP\_free,  
OCSP\_SINGLERESP\_new, OSSL\_CMP\_ITAV\_dup, OSSL\_CMP\_ITAV\_free,  
OSSL\_CMP\_MSG\_dup, OSSL\_CMP\_MSG\_it, OSSL\_CMP\_MSG\_free,  
OSSL\_CMP\_PKIHEADER\_free, OSSL\_CMP\_PKIHEADER\_it, OSSL\_CMP\_PKIHEADER\_new,  
OSSL\_CMP\_PKISI\_dup, OSSL\_CMP\_PKISI\_free, OSSL\_CMP\_PKISI\_it,  
OSSL\_CMP\_PKISI\_new, OSSL\_CMP\_PKISTATUS\_it, OSSL\_CRMF\_CERTID\_dup,

OSSL\_CRMF\_CERTID\_free, OSSL\_CRMF\_CERTID\_it, OSSL\_CRMF\_CERTID\_new,  
OSSL\_CRMF\_CERTTEMPLATE\_free, OSSL\_CRMF\_CERTTEMPLATE\_it,  
OSSL\_CRMF\_CERTTEMPLATE\_new, OSSL\_CRMF\_ENCRYPTEDVALUE\_free,  
OSSL\_CRMF\_ENCRYPTEDVALUE\_it, OSSL\_CRMF\_ENCRYPTEDVALUE\_new,  
OSSL\_CRMF\_MSGS\_free, OSSL\_CRMF\_MSGS\_it, OSSL\_CRMF\_MSGS\_new,  
OSSL\_CRMF\_MSG\_dup, OSSL\_CRMF\_MSG\_free, OSSL\_CRMF\_MSG\_it,  
OSSL\_CRMF\_MSG\_new, OSSL\_CRMF\_PBMPARAMETER\_free,  
OSSL\_CRMF\_PBMPARAMETER\_it, OSSL\_CRMF\_PBMPARAMETER\_new,  
OSSL\_CRMF\_PKIPUBLICATIONINFO\_free, OSSL\_CRMF\_PKIPUBLICATIONINFO\_it,  
OSSL\_CRMF\_PKIPUBLICATIONINFO\_new, OSSL\_CRMF\_SINGLEPUBINFO\_free,  
OSSL\_CRMF\_SINGLEPUBINFO\_it, OSSL\_CRMF\_SINGLEPUBINFO\_new,  
OTHERNAME\_free, OTHERNAME\_new, PBE2PARAM\_free, PBE2PARAM\_new,  
PBEPARAM\_free, PBEPARAM\_new, PBKDF2PARAM\_free, PBKDF2PARAM\_new,  
PKCS12\_BAGS\_free, PKCS12\_BAGS\_new, PKCS12\_MAC\_DATA\_free,  
PKCS12\_MAC\_DATA\_new, PKCS12\_SAFEBAG\_free, PKCS12\_SAFEBAG\_new,  
PKCS12\_free, PKCS12\_new, PKCS7\_DIGEST\_free, PKCS7\_DIGEST\_new,  
PKCS7\_ENCRYPT\_free, PKCS7\_ENCRYPT\_new, PKCS7\_ENC\_CONTENT\_free,  
PKCS7\_ENC\_CONTENT\_new, PKCS7\_ENVELOPE\_free, PKCS7\_ENVELOPE\_new,  
PKCS7\_ISSUER\_AND\_SERIAL\_free, PKCS7\_ISSUER\_AND\_SERIAL\_new,  
PKCS7\_RECIP\_INFO\_free, PKCS7\_RECIP\_INFO\_new, PKCS7\_SIGNED\_free,  
PKCS7\_SIGNED\_new, PKCS7\_SIGNER\_INFO\_free, PKCS7\_SIGNER\_INFO\_new,  
PKCS7\_SIGN\_ENVELOPE\_free, PKCS7\_SIGN\_ENVELOPE\_new, PKCS7\_dup,  
PKCS7\_free, PKCS7\_new\_ex, PKCS7\_new, PKCS7\_print\_ctx,  
PKCS8\_PRIV\_KEY\_INFO\_free, PKCS8\_PRIV\_KEY\_INFO\_new,  
PKEY\_USAGE\_PERIOD\_free, PKEY\_USAGE\_PERIOD\_new, POLICYINFO\_free,  
POLICYINFO\_new, POLICYQUALINFO\_free, POLICYQUALINFO\_new,  
POLICY\_CONSTRAINTS\_free, POLICY\_CONSTRAINTS\_new, POLICY\_MAPPING\_free,  
POLICY\_MAPPING\_new, PROFESSION\_INFOS\_free, PROFESSION\_INFOS\_new,  
PROFESSION\_INFO\_free, PROFESSION\_INFO\_new,  
PROXY\_CERT\_INFO\_EXTENSION\_free, PROXY\_CERT\_INFO\_EXTENSION\_new,  
PROXY\_POLICY\_free, PROXY\_POLICY\_new, RSAPrivateKey\_dup,  
RSAPublicKey\_dup, RSA\_OAEP\_PARAMS\_free, RSA\_OAEP\_PARAMS\_new,  
RSA\_PSS\_PARAMS\_free, RSA\_PSS\_PARAMS\_new, RSA\_PSS\_PARAMS\_dup,

SCRYPT\_PARAMS\_free, SCRYPT\_PARAMS\_new, SXNETID\_free, SXNETID\_new,  
SXNET\_free, SXNET\_new, TLS\_FEATURE\_free, TLS\_FEATURE\_new,  
TS\_ACCURACY\_dup, TS\_ACCURACY\_free, TS\_ACCURACY\_new, TS\_MSG\_IMPRINT\_dup,  
TS\_MSG\_IMPRINT\_free, TS\_MSG\_IMPRINT\_new, TS\_REQ\_dup, TS\_REQ\_free,  
TS\_REQ\_new, TS\_RESP\_dup, TS\_RESP\_free, TS\_RESP\_new, TS\_STATUS\_INFO\_dup,  
TS\_STATUS\_INFO\_free, TS\_STATUS\_INFO\_new, TS\_TST\_INFO\_dup,  
TS\_TST\_INFO\_free, TS\_TST\_INFO\_new, USERNOTICE\_free, USERNOTICE\_new,  
X509\_ALGOR\_free, X509\_ALGOR\_it, X509\_ALGOR\_new, X509\_ATTRIBUTE\_dup,  
X509\_ATTRIBUTE\_free, X509\_ATTRIBUTE\_new, X509\_CERT\_AUX\_free,  
X509\_CERT\_AUX\_new, X509\_CINF\_free, X509\_CINF\_new, X509\_CRL\_INFO\_free,  
X509\_CRL\_INFO\_new, X509\_CRL\_dup, X509\_CRL\_free, X509\_CRL\_new\_ex,  
X509\_CRL\_new, X509\_EXTENSION\_dup, X509\_EXTENSION\_free,  
X509\_EXTENSION\_new, X509\_NAME\_ENTRY\_dup, X509\_NAME\_ENTRY\_free,  
X509\_NAME\_ENTRY\_new, X509\_NAME\_dup, X509\_NAME\_free, X509\_NAME\_new,  
X509\_REQ\_INFO\_free, X509\_REQ\_INFO\_new, X509\_REQ\_dup, X509\_REQ\_free,  
X509\_REQ\_new, X509\_REQ\_new\_ex, X509\_REVOKED\_dup, X509\_REVOKED\_free,  
X509\_REVOKED\_new, X509\_SIG\_free, X509\_SIG\_new, X509\_VAL\_free,  
X509\_VAL\_new, X509\_dup, - ASN1 object utilities

## SYNOPSIS

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

```
DECLARE_ASN1_FUNCTIONS(type)
```

```
IMPLEMENT_ASN1_FUNCTIONS(stname)
```

```
typedef struct ASN1_ITEM_st ASN1_ITEM;
```

```
extern const ASN1_ITEM TYPE_it;
```

```
TYPE *TYPE_new(void);
```

```
TYPE *TYPE_dup(const TYPE *a);
```

```
void TYPE_free(TYPE *a);
```

```
int TYPE_print_ctx(BIO *out, TYPE *a, int indent, const ASN1_PCTX *pctx);
```

The following functions have been deprecated since OpenSSL 3.0, and can be hidden entirely by defining `OPENSSL_API_COMPAT` with a suitable version value, see `openssl_user_macros(7)`:

```
DSA *DSAparams_dup(const DSA *dsa);
RSA *RSAPrivateKey_dup(const RSA *rsa);
RSA *RSAPublicKey_dup(const RSA *rsa);
```

## DESCRIPTION

In the description below, `TYPE` is used as a placeholder for any of the OpenSSL datatypes, such as `X509`.

The OpenSSL ASN1 parsing library templates are like a data-driven bytecode interpreter. Every ASN1 object as a global variable, `TYPE_it`, that describes the item such as its fields. (On systems which cannot export variables from shared libraries, the global is instead a function which returns a pointer to a static variable.

The macro `DECLARE_ASN1_FUNCTIONS()` is typically used in header files to generate the function declarations.

The macro `IMPLEMENT_ASN1_FUNCTIONS()` is used once in a source file to generate the function bodies.

`TYPE_new()` allocates an empty object of the indicated type. The object returned must be released by calling `TYPE_free()`.

`TYPE_new_ex()` is similiar to `TYPE_new()` but also passes the library context `libctx` and the property query `propq` to use when retrieving algorithms from providers. This created object can then be used when loading binary data using `d2i_TYPE()`.

`TYPE_dup()` copies an existing object, leaving it untouched.

TYPE\_free() releases the object and all pointers and sub-objects within it.

TYPE\_print\_ctx() prints the object a on the specified BIO out. Each line will be prefixed with indent spaces. The pctx specifies the printing context and is for internal use; use NULL to get the default behavior. If a print function is user-defined, then pass in any pctx down to any nested calls.

## RETURN VALUES

TYPE\_new(), TYPE\_new\_ex() and TYPE\_dup() return a pointer to the object or NULL on failure.

TYPE\_print\_ctx() returns 1 on success or zero on failure.

## HISTORY

The functions X509\_REQ\_new\_ex(), X509\_CRL\_new\_ex(), PKCS7\_new\_ex() and CMS\_ContentInfo\_new\_ex() were added in OpenSSL 3.0.

The functions DSAParams\_dup(), RSAPrivateKey\_dup() and RSAPublicKey\_dup() were deprecated in 3.0.

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