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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'X509_ATTRIBUTE_dup.3ossl' command

```
$ man X509_ATTRIBUTE_dup.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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