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## **Red Hat Enterprise Linux Release 9.2 Manual Pages on 'X509\_STORE\_set\_default\_paths.3ossl' command**

**`$ man X509_STORE_set_default_paths.3ossl`**

X509\_STORE\_ADD\_CERT(3ossl)      OpenSSL      X509\_STORE\_ADD\_CERT(3ossl)

### NAME

X509\_STORE, X509\_STORE\_add\_cert, X509\_STORE\_add\_crl,  
X509\_STORE\_set\_depth, X509\_STORE\_set\_flags, X509\_STORE\_set\_purpose,  
X509\_STORE\_set\_trust, X509\_STORE\_add\_lookup, X509\_STORE\_load\_file\_ex,  
X509\_STORE\_load\_file, X509\_STORE\_load\_path, X509\_STORE\_load\_store\_ex,  
X509\_STORE\_load\_store, X509\_STORE\_set\_default\_paths\_ex,  
X509\_STORE\_set\_default\_paths, X509\_STORE\_load\_locations\_ex,  
X509\_STORE\_load\_locations - X509\_STORE manipulation

### SYNOPSIS

```
#include <openssl/x509_vfy.h>

typedef x509_store_st X509_STORE;

int X509_STORE_add_cert(X509_STORE *ctx, X509 *x);
int X509_STORE_add_crl(X509_STORE *ctx, X509_CRL *x);
int X509_STORE_set_depth(X509_STORE *store, int depth);
int X509_STORE_set_flags(X509_STORE *ctx, unsigned long flags);
int X509_STORE_set_purpose(X509_STORE *ctx, int purpose);
int X509_STORE_set_trust(X509_STORE *ctx, int trust);
X509_LOOKUP *X509_STORE_add_lookup(X509_STORE *store,
                                   X509_LOOKUP_METHOD *meth);
int X509_STORE_set_default_paths_ex(X509_STORE *ctx, OSSL_LIB_CTX *libctx,
                                   const char *propq);
int X509_STORE_set_default_paths(X509_STORE *ctx);
```

```

int X509_STORE_load_file_ex(X509_STORE *ctx, const char *file,
                           OSSL_LIB_CTX *libctx, const char *propq);
int X509_STORE_load_file(X509_STORE *ctx, const char *file);
int X509_STORE_load_path(X509_STORE *ctx, const char *dir);
int X509_STORE_load_store_ex(X509_STORE *ctx, const char *uri,
                             OSSL_LIB_CTX *libctx, const char *propq);
int X509_STORE_load_store(X509_STORE *ctx, const char *uri);
int X509_STORE_load_locations_ex(X509_STORE *ctx, const char *file,
                                 const char *dir, OSSL_LIB_CTX *libctx,
                                 const char *propq);
int X509_STORE_load_locations(X509_STORE *ctx,
                              const char *file, const char *dir);

```

## DESCRIPTION

The X509\_STORE structure is intended to be a consolidated mechanism for holding information about X.509 certificates and CRLs, and constructing and validating chains of certificates terminating in trusted roots. It admits multiple lookup mechanisms and efficient scaling performance with large numbers of certificates, and a great deal of flexibility in how validation and policy checks are performed.

Details of the chain building and checking process are described in "Certification Path Building" in openssl-verification-options(1) and "Certification Path Validation" in openssl-verification-options(1).

X509\_STORE\_new(3) creates an empty X509\_STORE structure, which contains no information about trusted certificates or where such certificates are located on disk, and is generally not usable. Normally, trusted certificates will be added to the X509\_STORE to prepare it for use, via mechanisms such as X509\_STORE\_add\_lookup() and X509\_LOOKUP\_file(), or PEM\_read\_bio\_X509\_AUX() and X509\_STORE\_add\_cert(). CRLs can also be added, and many behaviors configured as desired.

Once the X509\_STORE is suitably configured, X509\_STORE\_CTX\_new() is used to instantiate a single-use X509\_STORE\_CTX for each chain-building and verification operation. That process includes providing the end-entity certificate to be verified and an additional set of untrusted

certificates that may be used in chain-building. As such, it is expected that the certificates included in the X509\_STORE are certificates that represent trusted entities such as root certificate authorities (CAs). OpenSSL represents these trusted certificates internally as X509 objects with an associated X509\_CERT\_AUX, as are produced by PEM\_read\_bio\_X509\_AUX() and similar routines that refer to X509\_AUX. The public interfaces that operate on such trusted certificates still operate on pointers to X509 objects, though.

X509\_STORE\_add\_cert() and X509\_STORE\_add\_crl() add the respective object to the X509\_STORE's local storage. Untrusted objects should not be added in this way. The added object's reference count is incremented by one, hence the caller retains ownership of the object and needs to free it when it is no longer needed.

X509\_STORE\_set\_depth(), X509\_STORE\_set\_flags(), X509\_STORE\_set\_purpose(), X509\_STORE\_set\_trust(), and X509\_STORE\_set1\_param() set the default values for the corresponding values used in certificate chain validation. Their behavior is documented in the corresponding X509\_VERIFY\_PARAM manual pages, e.g., X509\_VERIFY\_PARAM\_set\_depth(3).

X509\_STORE\_add\_lookup() finds or creates a X509\_LOOKUP(3) with the X509\_LOOKUP\_METHOD(3) meth and adds it to the X509\_STORE store. This also associates the X509\_STORE with the lookup, so X509\_LOOKUP functions can look up objects in that store.

X509\_STORE\_load\_file\_ex() loads trusted certificate(s) into an X509\_STORE from a given file. The library context libctx and property query propq are used when fetching algorithms from providers.

X509\_STORE\_load\_file() is similar to X509\_STORE\_load\_file\_ex() but uses NULL for the library context libctx and property query propq.

X509\_STORE\_load\_path() loads trusted certificate(s) into an X509\_STORE from a given directory path. The certificates in the directory must be in hashed form, as documented in X509\_LOOKUP\_hash\_dir(3).

X509\_STORE\_load\_store\_ex() loads trusted certificate(s) into an X509\_STORE from a store at a given URI. The library context libctx and

property query propq are used when fetching algorithms from providers.

X509\_STORE\_load\_store() is similar to X509\_STORE\_load\_store\_ex() but uses NULL for the library context libctx and property query propq.

X509\_STORE\_load\_locations\_ex() combines X509\_STORE\_load\_file\_ex() and X509\_STORE\_load\_path() for a given file and/or directory path. It is permitted to specify just a file, just a directory, or both paths.

X509\_STORE\_load\_locations() is similar to X509\_STORE\_load\_locations\_ex() but uses NULL for the library context libctx and property query propq.

X509\_STORE\_set\_default\_paths\_ex() is somewhat misnamed, in that it does not set what default paths should be used for loading certificates.

Instead, it loads certificates into the X509\_STORE from the hardcoded default paths. The library context libctx and property query propq are used when fetching algorithms from providers.

X509\_STORE\_set\_default\_paths() is similar to X509\_STORE\_set\_default\_paths\_ex() but uses NULL for the library context libctx and property query propq.

## RETURN VALUES

X509\_STORE\_add\_cert(), X509\_STORE\_add\_crl(), X509\_STORE\_set\_depth(), X509\_STORE\_set\_flags(), X509\_STORE\_set\_purpose(), X509\_STORE\_set\_trust(), X509\_STORE\_load\_file\_ex(), X509\_STORE\_load\_file(), X509\_STORE\_load\_path(), X509\_STORE\_load\_store\_ex(), X509\_STORE\_load\_store(), X509\_STORE\_load\_locations\_ex(), X509\_STORE\_load\_locations(), X509\_STORE\_set\_default\_paths\_ex() and X509\_STORE\_set\_default\_paths() return 1 on success or 0 on failure.

X509\_STORE\_add\_lookup() returns the found or created X509\_LOOKUP(3), or NULL on error.

## SEE ALSO

X509\_LOOKUP\_hash\_dir(3). X509\_VERIFY\_PARAM\_set\_depth(3). X509\_STORE\_new(3), X509\_STORE\_get0\_param(3)

## HISTORY

The functions X509\_STORE\_set\_default\_paths\_ex(),

X509\_STORE\_load\_file\_ex(), X509\_STORE\_load\_store\_ex() and  
X509\_STORE\_load\_locations\_ex() were added in OpenSSL 3.0.

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