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### ***Rocky Enterprise Linux 9.2 Manual Pages on command 'X509\_LOOKUP\_ctrl\_ex.3ossl'***

**`$ man X509_LOOKUP_ctrl_ex.3ossl`**

X509\_LOOKUP(3ossl)            OpenSSL            X509\_LOOKUP(3ossl)

#### NAME

X509\_LOOKUP, X509\_LOOKUP\_TYPE, X509\_LOOKUP\_new, X509\_LOOKUP\_free,  
X509\_LOOKUP\_init, X509\_LOOKUP\_shutdown, X509\_LOOKUP\_set\_method\_data,  
X509\_LOOKUP\_get\_method\_data, X509\_LOOKUP\_ctrl\_ex, X509\_LOOKUP\_ctrl,  
X509\_LOOKUP\_load\_file\_ex, X509\_LOOKUP\_load\_file, X509\_LOOKUP\_add\_dir,  
X509\_LOOKUP\_add\_store\_ex, X509\_LOOKUP\_add\_store,  
X509\_LOOKUP\_load\_store\_ex, X509\_LOOKUP\_load\_store,  
X509\_LOOKUP\_get\_store, X509\_LOOKUP\_by\_subject\_ex,  
X509\_LOOKUP\_by\_subject, X509\_LOOKUP\_by\_issuer\_serial,  
X509\_LOOKUP\_by\_fingerprint, X509\_LOOKUP\_by\_alias - OpenSSL certificate  
lookup mechanisms

#### SYNOPSIS

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

typedef x509_lookup_st X509_LOOKUP;

typedef enum X509_LOOKUP_TYPE;

X509_LOOKUP *X509_LOOKUP_new(X509_LOOKUP_METHOD *method);

int X509_LOOKUP_init(X509_LOOKUP *ctx);
```

```

int X509_LOOKUP_shutdown(X509_LOOKUP *ctx);
void X509_LOOKUP_free(X509_LOOKUP *ctx);
int X509_LOOKUP_set_method_data(X509_LOOKUP *ctx, void *data);
void *X509_LOOKUP_get_method_data(const X509_LOOKUP *ctx);
int X509_LOOKUP_ctrl_ex(X509_LOOKUP *ctx, int cmd, const char *argc, long argl,
                        char **ret, OSSL_LIB_CTX *libctx, const char *propq);
int X509_LOOKUP_ctrl(X509_LOOKUP *ctx, int cmd, const char *argc,
                    long argl, char **ret);
int X509_LOOKUP_load_file_ex(X509_LOOKUP *ctx, char *name, long type,
                            OSSL_LIB_CTX *libctx, const char *propq);
int X509_LOOKUP_load_file(X509_LOOKUP *ctx, char *name, long type);
int X509_LOOKUP_load_file_ex(X509_LOOKUP *ctx, char *name, long type,
                            OSSL_LIB_CTX *libctx, const char *propq);
int X509_LOOKUP_add_dir(X509_LOOKUP *ctx, char *name, long type);
int X509_LOOKUP_add_store_ex(X509_LOOKUP *ctx, char *uri, OSSL_LIB_CTX *libctx,
                            const char *propq);
int X509_LOOKUP_add_store(X509_LOOKUP *ctx, char *uri);
int X509_LOOKUP_load_store_ex(X509_LOOKUP *ctx, char *uri, OSSL_LIB_CTX *libctx,
                            const char *propq);
int X509_LOOKUP_load_store(X509_LOOKUP *ctx, char *uri);
X509_STORE *X509_LOOKUP_get_store(const X509_LOOKUP *ctx);
int X509_LOOKUP_by_subject_ex(X509_LOOKUP *ctx, X509_LOOKUP_TYPE type,
                            const X509_NAME *name, X509_OBJECT *ret,
                            OSSL_LIB_CTX *libctx, const char *propq);
int X509_LOOKUP_by_subject(X509_LOOKUP *ctx, X509_LOOKUP_TYPE type,
                            const X509_NAME *name, X509_OBJECT *ret);
int X509_LOOKUP_by_issuer_serial(X509_LOOKUP *ctx, X509_LOOKUP_TYPE type,
                                const X509_NAME *name,
                                const ASN1_INTEGER *serial, X509_OBJECT *ret);
int X509_LOOKUP_by_fingerprint(X509_LOOKUP *ctx, X509_LOOKUP_TYPE type,
                                const unsigned char *bytes, int len,
                                X509_OBJECT *ret);
int X509_LOOKUP_by_alias(X509_LOOKUP *ctx, X509_LOOKUP_TYPE type,

```

```
const char *str, int len, X509_OBJECT *ret);
```

## DESCRIPTION

The X509\_LOOKUP structure holds the information needed to look up certificates and CRLs according to an associated X509\_LOOKUP\_METHOD(3).

Multiple X509\_LOOKUP instances can be added to an X509\_STORE(3) to enable lookup in that store.

X509\_LOOKUP\_new() creates a new X509\_LOOKUP using the given lookup method. It can also be created by calling X509\_STORE\_add\_lookup(3), which will associate a X509\_STORE with the lookup mechanism.

X509\_LOOKUP\_init() initializes the internal state and resources as needed by the given X509\_LOOKUP to do its work.

X509\_LOOKUP\_shutdown() tears down the internal state and resources of the given X509\_LOOKUP.

X509\_LOOKUP\_free() destructs the given X509\_LOOKUP.

X509\_LOOKUP\_set\_method\_data() and X509\_LOOKUP\_get\_method\_data() associates and retrieves a pointer to application data to and from the given X509\_LOOKUP, respectively.

X509\_LOOKUP\_ctrl\_ex() is used to set or get additional data to or from a X509\_LOOKUP structure or its associated X509\_LOOKUP\_METHOD(3). The arguments of the control command are passed via argc and argl, its return value via \*ret. The library context libctx and property query propq are used when fetching algorithms from providers. The meaning of the arguments depends on the cmd number of the control command. In general, this function is not called directly, but wrapped by a macro call, see below. The control cmds known to OpenSSL are discussed in more depth in "Control Commands".

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

X509\_LOOKUP\_load\_file\_ex() passes a filename to be loaded immediately into the associated X509\_STORE. The library context libctx and property query propq are used when fetching algorithms from providers. type indicates what type of object is expected. This can only be used with a lookup using the implementation X509\_LOOKUP\_file(3).

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

X509\_LOOKUP\_add\_dir() passes a directory specification from which certificates and CRLs are loaded on demand into the associated X509\_STORE. type indicates what type of object is expected. This can only be used with a lookup using the implementation X509\_LOOKUP\_hash\_dir(3).

X509\_LOOKUP\_add\_store\_ex() passes a URI for a directory-like structure from which containers with certificates and CRLs are loaded on demand into the associated X509\_STORE. The library context libctx and property query propq are used when fetching algorithms from providers.

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

X509\_LOOKUP\_load\_store\_ex() passes a URI for a single container from which certificates and CRLs are immediately loaded into the associated X509\_STORE. The library context libctx and property query propq are used when fetching algorithms from providers. These functions can only be used with a lookup using the implementation X509\_LOOKUP\_store(3).

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

X509\_LOOKUP\_load\_file\_ex(), X509\_LOOKUP\_load\_file(), X509\_LOOKUP\_add\_dir(), X509\_LOOKUP\_add\_store\_ex() X509\_LOOKUP\_add\_store(), X509\_LOOKUP\_load\_store\_ex() and X509\_LOOKUP\_load\_store() are implemented as macros that use X509\_LOOKUP\_ctrl().

X509\_LOOKUP\_by\_subject\_ex(), X509\_LOOKUP\_by\_subject(), X509\_LOOKUP\_by\_issuer\_serial(), X509\_LOOKUP\_by\_fingerprint(), and X509\_LOOKUP\_by\_alias() look up certificates and CRLs in the X509\_STORE(3) associated with the X509\_LOOKUP using different criteria, where the looked up object is stored in ret. Some of the underlying X509\_LOOKUP\_METHODs will also cache objects matching the criteria in the associated X509\_STORE, which makes it possible to handle cases where the criteria have more than one hit.

## Control Commands

The X509\_LOOKUP\_METHODs built into OpenSSL recognize the following

X509\_LOOKUP\_ctrl() cmds:

### X509\_L\_FILE\_LOAD

This is the command that X509\_LOOKUP\_load\_file\_ex() and X509\_LOOKUP\_load\_file() use. The filename is passed in argc, and the type in argl.

### X509\_L\_ADD\_DIR

This is the command that X509\_LOOKUP\_add\_dir() uses. The directory specification is passed in argc, and the type in argl.

### X509\_L\_ADD\_STORE

This is the command that X509\_LOOKUP\_add\_store\_ex() and X509\_LOOKUP\_add\_store() use. The URI is passed in argc.

### X509\_L\_LOAD\_STORE

This is the command that X509\_LOOKUP\_load\_store\_ex() and X509\_LOOKUP\_load\_store() use. The URI is passed in argc.

## RETURN VALUES

X509\_LOOKUP\_new() returns a X509\_LOOKUP pointer when successful, or NULL on error.

X509\_LOOKUP\_init() and X509\_LOOKUP\_shutdown() return 1 on success, or 0 on error.

X509\_LOOKUP\_ctrl() returns -1 if the X509\_LOOKUP doesn't have an associated X509\_LOOKUP\_METHOD, or 1 if the doesn't have a control function. Otherwise, it returns what the control function in the X509\_LOOKUP\_METHOD returns, which is usually 1 on success and 0 in error.

X509\_LOOKUP\_get\_store() returns a X509\_STORE pointer if there is one, otherwise NULL.

X509\_LOOKUP\_by\_subject\_ex(), X509\_LOOKUP\_by\_subject(), X509\_LOOKUP\_by\_issuer\_serial(), X509\_LOOKUP\_by\_fingerprint(), and X509\_LOOKUP\_by\_alias() all return 0 if there is no X509\_LOOKUP\_METHOD or that method doesn't implement the corresponding function.

Otherwise, it returns what the corresponding function in the

X509\_LOOKUP\_METHOD returns, which is usually 1 on success and 0 in error.

#### SEE ALSO

X509\_LOOKUP\_METHOD(3), X509\_STORE(3)

#### HISTORY

The functions X509\_LOOKUP\_by\_subject\_ex() and X509\_LOOKUP\_ctrl\_ex() were added in OpenSSL 3.0.

The macros X509\_LOOKUP\_load\_file\_ex(), X509\_LOOKUP\_load\_store\_ex() and X509\_LOOKUP\_add\_store\_ex() were added in OpenSSL 3.0.

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3.0.7                    2023-07-13                    X509\_LOOKUP(3openssl)