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

**\$ 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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