



## **Red Hat Enterprise Linux Release 9.2 Manual Pages on 'X509\_get\_key\_usage.3ossl' command**

**\$ man X509\_get\_key\_usage.3ossl**

X509\_GET\_EXTENSION\_FLAGS(3ossl) OpenSSL X509\_GET\_EXTENSION\_FLAGS(3ossl)

### NAME

X509\_get0\_subject\_key\_id, X509\_get0\_authority\_key\_id,  
X509\_get0\_authority\_issuer, X509\_get0\_authority\_serial,  
X509\_get\_pathlen, X509\_get\_extension\_flags, X509\_get\_key\_usage,  
X509\_get\_extended\_key\_usage, X509\_set\_proxy\_flag,  
X509\_set\_proxy\_pathlen, X509\_get\_proxy\_pathlen - retrieve certificate  
extension data

### SYNOPSIS

```
#include <openssl/x509v3.h>

long X509_get_pathlen(X509 *x);
uint32_t X509_get_extension_flags(X509 *x);
uint32_t X509_get_key_usage(X509 *x);
uint32_t X509_get_extended_key_usage(X509 *x);
const ASN1_OCTET_STRING *X509_get0_subject_key_id(X509 *x);
const ASN1_OCTET_STRING *X509_get0_authority_key_id(X509 *x);
const GENERAL_NAMES *X509_get0_authority_issuer(X509 *x);
const ASN1_INTEGER *X509_get0_authority_serial(X509 *x);
void X509_set_proxy_flag(X509 *x);
void X509_set_proxy_pathlen(int l);
```

```
long X509_get_proxy_pathlen(X509 *x);
```

## DESCRIPTION

These functions retrieve information related to commonly used certificate extensions.

`X509_get_pathlen()` retrieves the path length extension from a certificate. This extension is used to limit the length of a cert chain that may be issued from that CA.

`X509_get_extension_flags()` retrieves general information about a certificate, it will return one or more of the following flags ored together.

### EXFLAG\_V1

The certificate is an obsolete version 1 certificate.

### EXFLAG\_BCONS

The certificate contains a basic constraints extension.

### EXFLAG\_CA

The certificate contains basic constraints and asserts the CA flag.

### EXFLAG\_PROXY

The certificate is a valid proxy certificate.

### EXFLAG\_SI

The certificate is self issued (that is subject and issuer names match).

### EXFLAG\_SS

The subject and issuer names match and extension values imply it is self signed.

#### EXFLAG\_FRESHEST

The freshest CRL extension is present in the certificate.

#### EXFLAG\_CRITICAL

The certificate contains an unhandled critical extension.

#### EXFLAG\_INVALID

Some certificate extension values are invalid or inconsistent. The certificate should be rejected. This bit may also be raised after an out-of-memory error while processing the X509 object, so it may not be related to the processed ASN1 object itself.

#### EXFLAG\_NO\_FINGERPRINT

Failed to compute the internal SHA1 hash value of the certificate or CRL. This may be due to malloc failure or because no SHA1 implementation was found.

#### EXFLAG\_INVALID\_POLICY

The NID\_certificate\_policies certificate extension is invalid or inconsistent. The certificate should be rejected. This bit may also be raised after an out-of-memory error while processing the X509 object, so it may not be related to the processed ASN1 object itself.

#### EXFLAG\_KUSAGE

The certificate contains a key usage extension. The value can be retrieved using X509\_get\_key\_usage().

#### EXFLAG\_XKUSAGE

The certificate contains an extended key usage extension. The value can be retrieved using X509\_get\_extended\_key\_usage().

X509\_get\_key\_usage() returns the value of the key usage extension. If key usage is present will return zero or more of the flags: KU\_DIGITAL\_SIGNATURE, KU\_NON\_REPUDIATION, KU\_KEY\_ENCIPHERMENT, KU\_DATA\_ENCIPHERMENT, KU\_KEY\_AGREEMENT, KU\_KEY\_CERT\_SIGN, KU\_CRL\_SIGN, KU\_ENCIPHER\_ONLY or KU\_DECIPHER\_ONLY corresponding to individual key usage bits. If key usage is absent then UINT32\_MAX is returned.

X509\_get\_extended\_key\_usage() returns the value of the extended key usage extension. If extended key usage is present it will return zero or more of the flags: XKU\_SSL\_SERVER, XKU\_SSL\_CLIENT, XKU\_SMIME, XKU\_CODE\_SIGN, XKU\_OCSP\_SIGN, XKU\_TIMESTAMP, XKU\_DVCS or XKU\_ANYEKU. These correspond to the OIDs id-kp-serverAuth, id-kp-clientAuth, id-kp-emailProtection, id-kp-codeSigning, id-kp-OCSPSigning, id-kp-timeStamping, id-kp-dvcs and anyExtendedKeyUsage respectively. Additionally XKU\_SGC is set if either Netscape or Microsoft SGC OIDs are present.

X509\_get0\_subject\_key\_id() returns an internal pointer to the subject key identifier of x as an ASN1\_OCTET\_STRING or NULL if the extension is not present or cannot be parsed.

X509\_get0\_authority\_key\_id() returns an internal pointer to the authority key identifier of x as an ASN1\_OCTET\_STRING or NULL if the extension is not present or cannot be parsed.

X509\_get0\_authority\_issuer() returns an internal pointer to the authority certificate issuer of x as a stack of GENERAL\_NAME structures or NULL if the extension is not present or cannot be parsed.

X509\_get0\_authority\_serial() returns an internal pointer to the authority certificate serial number of x as an ASN1\_INTEGER or NULL if the extension is not present or cannot be parsed.

X509\_set\_proxy\_flag() marks the certificate with the EXFLAG\_PROXY flag.

This is for the users who need to mark non-RFC3820 proxy certificates as such, as OpenSSL only detects RFC3820 compliant ones.

X509\_set\_proxy\_pathlen() sets the proxy certificate path length for the given certificate x. This is for the users who need to mark non-RFC3820 proxy certificates as such, as OpenSSL only detects RFC3820 compliant ones.

X509\_get\_proxy\_pathlen() returns the proxy certificate path length for the given certificate x if it is a proxy certificate.

## NOTES

The value of the flags correspond to extension values which are cached in the X509 structure. If the flags returned do not provide sufficient information an application should examine extension values directly for example using X509\_get\_ext\_d2i().

If the key usage or extended key usage extension is absent then typically usage is unrestricted. For this reason X509\_get\_key\_usage() and X509\_get\_extended\_key\_usage() return U\_INT32\_MAX when the corresponding extension is absent. Applications can additionally check the return value of X509\_get\_extension\_flags() and take appropriate action if an extension is absent.

If X509\_get0\_subject\_key\_id() returns NULL then the extension may be absent or malformed. Applications can determine the precise reason using X509\_get\_ext\_d2i().

## RETURN VALUES

X509\_get\_pathlen() returns the path length value, or -1 if the extension is not present.

X509\_get\_extension\_flags(), X509\_get\_key\_usage() and X509\_get\_extended\_key\_usage() return sets of flags corresponding to the certificate extension values.

X509\_get0\_subject\_key\_id() returns the subject key identifier as a pointer to an ASN1\_OCTET\_STRING structure or NULL if the extension is absent or an error occurred during parsing.

X509\_get\_proxy\_pathlen() returns the path length value if the given certificate is a proxy one and has a path length set, and -1 otherwise.

#### SEE ALSO

X509\_check\_purpose(3)

#### HISTORY

X509\_get\_pathlen(), X509\_set\_proxy\_flag(), X509\_set\_proxy\_pathlen() and X509\_get\_proxy\_pathlen() were added in OpenSSL 1.1.0.

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