

**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 **UINT32\_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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