

**NAME**

hx509 CMS/pkcs7 functions -

**Functions**

int **hx509\_cms\_wrap\_ContentInfo** (const heim\_oid \*oid, const heim\_octet\_string \*buf, heim\_octet\_string \*res)

int **hx509\_cms\_unwrap\_ContentInfo** (const heim\_octet\_string \*in, heim\_oid \*oid, heim\_octet\_string \*out, int \*have\_data)

int **hx509\_cms\_unenvelope** (hx509\_context context, hx509\_certs certs, int flags, const void \*data, size\_t length, const heim\_octet\_string \*encryptedContent, time\_t time\_now, heim\_oid \*contentType, heim\_octet\_string \*content)

int **hx509\_cms\_envelope\_1** (hx509\_context context, int flags, hx509\_cert cert, const void \*data, size\_t length, const heim\_oid \*encryption\_type, const heim\_oid \*contentType, heim\_octet\_string \*content)

int **hx509\_cms\_verify\_signed** (hx509\_context context, hx509\_verify\_ctx ctx, unsigned int flags, const void \*data, size\_t length, const heim\_octet\_string \*signedContent, hx509\_certs pool, heim\_oid \*contentType, heim\_octet\_string \*content, hx509\_certs \*signer\_certs)

int **hx509\_cms\_create\_signed\_1** (hx509\_context context, int flags, const heim\_oid \*eContentType, const void \*data, size\_t length, const AlgorithmIdentifier \*digest\_alg, hx509\_cert cert, hx509\_peer\_info peer, hx509\_certs anchors, hx509\_certs pool, heim\_octet\_string \*signed\_data)

**Detailed Description**

See the **CMS/PKCS7 message functions.** for description and examples.

**Function Documentation**

int **hx509\_cms\_create\_signed\_1** (hx509\_context context, int flags, const heim\_oid \* eContentType, const void \* data, size\_t length, const AlgorithmIdentifier \* digest\_alg, hx509\_cert cert, hx509\_peer\_info peer, hx509\_certs anchors, hx509\_certs pool, heim\_octet\_string \* signed\_data)

Decode SignedData and verify that the signature is correct.

**Parameters:**

*context* A hx509 context.

*flags*

*eContentType* the type of the data.

*data* data to sign

*length* length of the data that data point to.

*digest\_alg* digest algorithm to use, use NULL to get the default or the peer determined algorithm.

*cert* certificate to use for sign the data.

*peer* info about the peer the message to send the message to, like what digest algorithm to use.

*anchors* trust anchors that the client will use, used to polulate the certificates included in the message

*pool* certificates to use in try to build the path to the trust anchors.

*signed\_data* the output of the function, free with `der_free_octet_string()`.

**int hx509\_cms\_envelope\_1 (hx509\_context context, int flags, hx509\_cert cert, const void \* data, size\_t length, const heim\_oid \* encryption\_type, const heim\_oid \* contentType, heim\_octet\_string \* content)**

Encrypt and encode EnvelopedData.

Encrypt and encode EnvelopedData. The data is encrypted with a random key and the the random key is encrypted with the certificates private key. This limits what private key type can be used to RSA.

**Parameters:**

*context* A hx509 context.

*flags* flags to control the behavior.

⊕ HX509\_CMS\_EV\_NO\_KU\_CHECK - Dont check KU on certificate

⊕ HX509\_CMS\_EV\_ALLOW\_WEAK - Allow weak crypto

⊕ HX509\_CMS\_EV\_ID\_NAME - prefer issuer name and serial number

*cert* Certificate to encrypt the EnvelopedData encryption key with.

*data* pointer the data to encrypt.

*length* length of the data that data point to.

*encryption\_type* Encryption cipher to use for the bulk data, use NULL to get default.

*contentType* type of the data that is encrypted

*content* the output of the function, free with `der_free_octet_string()`.

**int hx509\_cms\_unenvelope (hx509\_context context, hx509\_certs certs, int flags, const void \* data, size\_t length, const heim\_octet\_string \* encryptedContent, time\_t time\_now, heim\_oid \* contentType, heim\_octet\_string \* content)**

Decode and unencrypt EnvelopedData.

Extract data and parameteres from from the EnvelopedData. Also supports using detached EnvelopedData.

**Parameters:**

*context* A hx509 context.

*certs* Certificate that can decrypt the EnvelopedData encryption key.

*flags* HX509\_CMS\_UE flags to control the behavior.

*data* pointer the structure the contains the DER/BER encoded EnvelopedData stucture.

*length* length of the data that data point to.

*encryptedContent* in case of detached signature, this contains the actual encrypted data, otherwise its should be NULL.

*time\_now* set the current time, if zero the library uses now as the date.

*contentType* output type oid, should be freed with `der_free_oid()`.

*content* the data, free with `der_free_octet_string()`.

**int hx509\_cms\_unwrap\_ContentInfo (const heim\_octet\_string \* in, heim\_oid \* oid, heim\_octet\_string \* out, int \* have\_data)**

Decode an ContentInfo and unwrap data and oid it.

**Parameters:**

*in* the encoded buffer.

*oid* type of the content.

*out* data to be wrapped.

*have\_data* since the data is optional, this flags show the difference between no data and the zero length data.

**Returns:**

Returns an hx509 error code.

**int hx509\_cms\_verify\_signed (hx509\_context context, hx509\_verify\_ctx ctx, unsigned int flags, const void \* data, size\_t length, const heim\_octet\_string \* signedContent, hx509\_certs pool, heim\_oid \* contentType, heim\_octet\_string \* content, hx509\_certs \* signer\_certs)**

Decode SignedData and verify that the signature is correct.

**Parameters:**

*context* A hx509 context.

*ctx* a hx509 verify context.

*flags* to control the behavior of the function.

⊕ HX509\_CMS\_VS\_NO\_KU\_CHECK - Don't check KeyUsage

⊕ HX509\_CMS\_VS\_ALLOW\_DATA\_OID\_MISMATCH - allow oid mismatch

⊕ HX509\_CMS\_VS\_ALLOW\_ZERO\_SIGNER - no signer, see below.

*data* pointer to CMS SignedData encoded data.

*length* length of the data that data point to.

*signedContent* external data used for signature.

*pool* certificate pool to build certificates paths.

*contentType* free with `der_free_oid()`.

*content* the output of the function, free with `der_free_octet_string()`.

*signer\_certs* list of the certificates used to sign this request, free with **hx509\_certs\_free()**.

If `HX509_CMS_VS_NO_KU_CHECK` is set, allow more liberal search for matching certificates by not considering KeyUsage bits on the certificates.

If `HX509_CMS_VS_ALLOW_DATA_OID_MISMATCH`, allow `encapContentInfo` mismatch with the oid in `signedAttributes` (or if no `signedAttributes` where use, `pkcs7-data` oid). This is only needed to work with broken CMS implementations that doesn't follow CMS `signedAttributes` rules.

If `HX509_CMS_VS_NO_VALIDATE` flags is set, do not verify the signing certificates and leave that up to the caller.

If `HX509_CMS_VS_ALLOW_ZERO_SIGNER` is set, allow empty `SignerInfo` (no signatures). If `SignedData` have no signatures, the function will return 0 with `signer_certs` set to NULL. Zero signers is allowed by the standard, but since its only useful in corner cases, it make into a flag that the caller have to turn on.

**int hx509\_cms\_wrap\_ContentInfo (const heim\_oid \* oid, const heim\_octet\_string \* buf, heim\_octet\_string \* res)**

Wrap data and oid in a `ContentInfo` and encode it.

**Parameters:**

*oid* type of the content.

*buf* data to be wrapped. If a NULL pointer is passed in, the optional content field in the `ContentInfo` is not going be filled in.

*res* the encoded buffer, the result should be freed with `der_free_octet_string()`.

**Returns:**

Returns an hx509 error code.