

# VOMS CC API

1.5.0

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# Chapter 1

## Data Structure Index

### 1.1 Data Structures

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## Chapter 2

# File Index

### 2.1 File List

Here is a list of all files with brief descriptions:

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## Chapter 3

# Data Structure Documentation

### 3.1 attribute Struct Reference

```
#include <voms_api.h>
```

#### Data Fields

- `std::string` [name](#)
- `std::string` [qualifier](#)
- `std::string` [value](#)

#### 3.1.1 Detailed Description

Definition at line 63 of file `voms_api.h`.

#### 3.1.2 Field Documentation

##### 3.1.2.1 `std::string attribute::name`

attribute's group

Definition at line 64 of file `voms_api.h`.

##### 3.1.2.2 `std::string attribute::qualifier`

attribute's qualifier

Definition at line 65 of file `voms_api.h`.

##### 3.1.2.3 `std::string attribute::value`

attribute's value

Definition at line 66 of file `voms_api.h`.

The documentation for this struct was generated from the following file:

- [voms\\_api.h](#)

## 3.2 attributelist Struct Reference

```
#include <voms_api.h>
```

### Data Fields

- std::string [grantor](#)
- std::vector< [attribute](#) > [attributes](#)

### 3.2.1 Detailed Description

Definition at line 69 of file voms\_api.h.

### 3.2.2 Field Documentation

#### 3.2.2.1 std::vector<attribute> attributelist::attributes

The attributes themselves.

Definition at line 71 of file voms\_api.h.

#### 3.2.2.2 std::string attributelist::grantor

Who granted these attributes.

Definition at line 70 of file voms\_api.h.

The documentation for this struct was generated from the following file:

- [voms\\_api.h](#)

## 3.3 contactdata Struct Reference

```
#include <voms_api.h>
```

### Data Fields

- std::string [nick](#)
- std::string [host](#)
- std::string [contact](#)
- std::string [vo](#)
- int [port](#)
- int [version](#)

### 3.3.1 Detailed Description

Definition at line 83 of file voms\_api.h.

### 3.3.2 Field Documentation

#### 3.3.2.1 `std::string contactdata::contact`

The subject of the server's certificate

Definition at line 89 of file `voms_api.h`.

#### 3.3.2.2 `std::string contactdata::host`

The hostname of the server

Definition at line 88 of file `voms_api.h`.

#### 3.3.2.3 `std::string contactdata::nick`

< You must never allocate directly this structure. Its `sizeof()` is subject to change without notice. The only supported way to obtain it is via the `FindBy*` functions. The alias of the server

Definition at line 87 of file `voms_api.h`.

#### 3.3.2.4 `int contactdata::port`

The port on which the server is listening

Definition at line 91 of file `voms_api.h`.

#### 3.3.2.5 `int contactdata::version`

The version of globus under which the server is running

Definition at line 93 of file `voms_api.h`.

#### 3.3.2.6 `std::string contactdata::vo`

The VO served by this server

Definition at line 90 of file `voms_api.h`.

The documentation for this struct was generated from the following file:

- [voms\\_api.h](#)

## 3.4 data Struct Reference

User's characteristics: can be repeated. Generic name-value attribute : can be repeated.

```
#include <voms_api.h>
```

### Data Fields

- `std::string` [group](#)
- `std::string` [role](#)
- `std::string` [cap](#)

### 3.4.1 Detailed Description

User's characteristics: can be repeated. Generic name-value attribute : can be repeated.

Definition at line 55 of file voms\_api.h.

### 3.4.2 Field Documentation

#### 3.4.2.1 `std::string data::cap`

user's capability

Definition at line 58 of file voms\_api.h.

#### 3.4.2.2 `std::string data::group`

user's group

Definition at line 56 of file voms\_api.h.

#### 3.4.2.3 `std::string data::role`

user's role

Definition at line 57 of file voms\_api.h.

The documentation for this struct was generated from the following file:

- [voms\\_api.h](#)

## 3.5 voms Struct Reference

```
#include <voms_api.h>
```

### Public Member Functions

- [voms](#) (const [voms](#) &)
- [voms](#) ()
- [voms](#) & [operator=](#) (const [voms](#) &)
- [~voms](#) ()
- [AC](#) \* [GetAC](#) ()
- `std::vector< attributelist >` & [GetAttributes](#) ()
- `std::vector< std::string >` [GetTargets](#) ()

### Data Fields

- int [version](#)
- int [siglen](#)
- `std::string` [signature](#)
- `std::string` [user](#)
- `std::string` [userca](#)
- `std::string` [server](#)
- `std::string` [serverca](#)
- `std::string` [voname](#)

- std::string [uri](#)
- std::string [date1](#)
- std::string [date2](#)
- [data\\_type](#) type
- std::vector< [data](#) > [std](#)
- std::string [custom](#)
- std::vector< std::string > [fqan](#)
- std::string [serial](#)

## Friends

- class [vomsdata](#)
- int [TranslateVOMS](#) (struct vomsdatar \*vd, std::vector< [voms](#) > &v, int \*error)

### 3.5.1 Detailed Description

Definition at line 98 of file voms\_api.h.

### 3.5.2 Constructor & Destructor Documentation

3.5.2.1 voms::voms ( const voms & )

3.5.2.2 voms::voms ( )

3.5.2.3 voms::~~voms ( )

### 3.5.3 Member Function Documentation

3.5.3.1 AC\* voms::GetAC ( )

3.5.3.2 std::vector<attributelist>& voms::GetAttributes ( )

Generic attributes

3.5.3.3 std::vector<std::string> voms::GetTargets ( )

3.5.3.4 voms& voms::operator= ( const voms & )

### 3.5.4 Friends And Related Function Documentation

3.5.4.1 int TranslateVOMS ( struct vomsdatar \* vd, std::vector< [voms](#) > & v, int \* error ) [\[friend\]](#)

3.5.4.2 friend class [vomsdata](#) [\[friend\]](#)

Definition at line 99 of file voms\_api.h.

### 3.5.5 Field Documentation

3.5.5.1 std::string voms::custom

The data returned by an S command

Definition at line 113 of file voms\_api.h.

**3.5.5.2 std::string voms::date1**

Beginning of validity of the user info

Definition at line 109 of file voms\_api.h.

**3.5.5.3 std::string voms::date2**

End of validity of the user info

Definition at line 110 of file voms\_api.h.

**3.5.5.4 std::vector<std::string> voms::fqan**

Keeps the data in the compact format

Definition at line 115 of file voms\_api.h.

**3.5.5.5 std::string voms::serial**

Serial number. "0" if coming from non-ac

Definition at line 116 of file voms\_api.h.

**3.5.5.6 std::string voms::server**

The VOMS server DN, as from its certificate

Definition at line 105 of file voms\_api.h.

**3.5.5.7 std::string voms::serverca**

The CA which signed the VOMS certificate

Definition at line 106 of file voms\_api.h.

**3.5.5.8 int voms::siglen**

The length of the VOMS server signature

Definition at line 101 of file voms\_api.h.

**3.5.5.9 std::string voms::signature**

The VOMS server signature

Definition at line 102 of file voms\_api.h.

**3.5.5.10 std::vector<data> voms::std**

User's characteristics

Definition at line 112 of file voms\_api.h.



**3.5.5.11 data\_type voms::type**

The type of data returned

Definition at line 111 of file voms\_api.h.

**3.5.5.12 std::string voms::uri**

The URI of the VOMS server

Definition at line 108 of file voms\_api.h.

**3.5.5.13 std::string voms::user**

The user's DN, as from his certificate

Definition at line 103 of file voms\_api.h.

**3.5.5.14 std::string voms::userca**

The CA which signed the user's certificate

Definition at line 104 of file voms\_api.h.

**3.5.5.15 int voms::version**

0 means data didn't originate from an AC

Definition at line 100 of file voms\_api.h.

**3.5.5.16 std::string voms::voname**

The name of the VO to which the VOMS belongs

Definition at line 107 of file voms\_api.h.

The documentation for this struct was generated from the following file:

- [voms\\_api.h](#)

**3.6 vomsdata Struct Reference**

```
#include <voms_api.h>
```

**Data Structures**

- class **Initializer**

**Public Member Functions**

- [vomsdata](#) (std::string voms\_dir="", std::string cert\_dir="")
- bool [LoadSystemContacts](#) (std::string dir="")
- bool [LoadUserContacts](#) (std::string dir="")
- std::vector< [contactdata](#) > [FindByAlias](#) (std::string alias)

- `std::vector< contactdata > FindByVO` (`std::string vo`)
- `void Order` (`std::string att`)
- `void ResetOrder` (`void`)
- `void AddTarget` (`std::string target`)
- `std::vector< std::string > ListTargets` (`void`)
- `void ResetTargets` (`void`)
- `std::string ServerErrors` (`void`)
- `bool Retrieve` (`X509 *cert`, `STACK_OF(X509)*chain`, `recurse_type` how=`RECURSE_CHAIN`)
- `bool Contact` (`std::string hostname`, `int port`, `std::string servsubject`, `std::string command`)
- `bool Contact` (`std::string hostname`, `int port`, `std::string servsubject`, `std::string command`, `int timeout`)
- `bool ContactRaw` (`std::string hostname`, `int port`, `std::string servsubject`, `std::string command`, `std::string &raw`, `int &version`)
- `bool ContactRaw` (`std::string hostname`, `int port`, `std::string servsubject`, `std::string command`, `std::string &raw`, `int &version`, `int timeout`)
- `void SetVerificationType` (`verify_type` how)
- `void SetLifetime` (`int lifetime`)
- `bool Import` (`std::string buffer`)
- `bool Export` (`std::string &data`)
- `bool DefaultData` (`voms &`)
- `std::string ErrorMessage` (`void`)
- `bool RetrieveFromCtx` (`gss_ctx_id_t context`, `recurse_type` how)
- `bool RetrieveFromCred` (`gss_cred_id_t credential`, `recurse_type` how)
- `bool Retrieve` (`X509_EXTENSION *ext`)
- `bool RetrieveFromProxy` (`recurse_type` how)
- `bool Retrieve` (`FILE *file`, `recurse_type` how)
- `bool Retrieve` (`AC *ac`)
- `~vomsdata` (`()`)
- `vomsdata` (`const vomsdata &`)
- `void SetRetryCount` (`int retryCount`)
- `void SetVerificationTime` (`time_t`)
- `bool LoadCredentials` (`X509 *`, `EVP_PKEY *`, `STACK_OF(X509)*`)
- `bool ContactRESTRaw` (`const std::string &`, `int`, `const std::string &`, `std::string &`, `int`, `int`)

## Data Fields

- `verror_type error`
- `std::vector< voms > data`
- `std::string workvo`
- `std::string extra\_data`

### 3.6.1 Detailed Description

Definition at line 194 of file `voms_api.h`.

### 3.6.2 Constructor & Destructor Documentation

#### 3.6.2.1 `vomsdata::vomsdata ( std::string voms_dir = "", std::string cert_dir = "" )`

##### Parameters

<code>voms_dir</code>	The directory which contains the certificate of the VOMS server
<code>cert_dir</code>	The directory which contains the certificate of the CA

If `voms_dir` is empty, the value of the environment variable `X509_VOMS_DIR` is taken.

If `cert_dir` is empty, the value of the environment variable `X509_CERT_DIR` is taken.

3.6.2.2 `vomldata::~vomldata ( )`

3.6.2.3 `vomldata::vomldata ( const vomldata & )`

### 3.6.3 Member Function Documentation

3.6.3.1 `void vomldata::AddTarget ( std::string target )`

Adds a target to the AC.

`\param target` The target to be added. it should be a FQDN.

3.6.3.2 `bool vomldata::Contact ( std::string hostname, int port, std::string servsubject, std::string command )`

Contacts a VOMS server to get a certificate

It is the equivalent of the `voms_proxy_init` command, but without the `&ndash;include` functionality.  
`\param hostname` FQDN of the VOMS server  
`\param port` the port on which the VOMS server is listening  
`\param servsubject` the subject of the server's certificate  
`\param command` the command sent to the server  
`\return` failure (F) or success (T)

3.6.3.3 `bool vomldata::Contact ( std::string hostname, int port, std::string servsubject, std::string command, int timeout )`

Contacts a VOMS server to get a certificate

It is the equivalent of the `voms_proxy_init` command, but without the `&ndash;include` functionality.  
`\param hostname` FQDN of the VOMS server  
`\param port` the port on which the VOMS server is listening  
`\param servsubject` the subject of the server's certificate  
`\param command` the command sent to the server  
`\return` failure (F) or success (T)

3.6.3.4 `bool vomldata::ContactRaw ( std::string hostname, int port, std::string servsubject, std::string command, std::string & raw, int & version )`

Same as `Contact`, however it does not start the verification process, and the message received from the server is not parsed.

#### Parameters

<i>hostname</i>	FQDN of the VOMS server
<i>port</i>	the port on which the VOMS server is listening
<i>servsubject</i>	the subject of the server's certificate
<i>command</i>	the command sent to the server
<i>raw</i>	OUTPUT PARAMETER the answer from the server
<i>version</i>	OUTPUT PARAMETER the version of the answer

#### Returns

failure (F) or success (T)

**3.6.3.5** `bool vomsdata::ContactRaw ( std::string hostname, int port, std::string servsubject, std::string command, std::string & raw, int & version, int timeout )`

Same as `Contact`, however it does not start the verification process, and the message received from the server is not parsed.

#### Parameters

<i>hostname</i>	FQDN of the VOMS server
<i>port</i>	the port on which the VOMS server is listening
<i>servsubject</i>	the subject of the server's certificate
<i>command</i>	the command sent to the server
<i>raw</i>	OUTPUT PARAMETER the answer from the server
<i>version</i>	OUTPUT PARAMETER the version of the answer

#### Returns

failure (F) or success (T)

**3.6.3.6** `bool vomsdata::ContactRESTRaw ( const std::string &, int, const std::string &, std::string &, int, int )`

**3.6.3.7** `bool vomsdata::DefaultData ( voms & )`

Get the default data extension from those present in the pseudo certificate

**3.6.3.8** `std::string vomsdata::ErrorMessage ( void )`

Gets a textual description of the error.

#### Returns

A string containing the error message.

**3.6.3.9** `bool vomsdata::Export ( std::string & data )`

Exports data from [vomsdata::data](#) to the format used for inclusion into a certificate.

The function doesn't verify the data

#### Parameters

<i>data</i>	The certificate extension
-------------	---------------------------

#### Returns

Failure (F) or Success (T)

**3.6.3.10** `std::vector<contactdata> vomsdata::FindByAlias ( std::string alias )`

Finds servers which share a common alias.

#### Parameters

<i>alias</i>	The alias to look for.
--------------	------------------------

## Returns

The servers found. The order in which they are returned is unspecified.

### 3.6.3.11 `std::vector<contactdata> vomsdata::FindByVO ( std::string vo )`

Finds servers which serve a common VO

## Parameters

<i>vo</i>	The VO name to look for.
-----------	--------------------------

## Returns

The servers found. The order in which they are returned is unspecified.

### 3.6.3.12 `bool vomsdata::Import ( std::string buffer )`

Converts data from the format used for inclusion into a certificate to the internal format

The function does verify the data.

## Parameters

<i>buffer</i>	contains the data to be converted
---------------	-----------------------------------

## Returns

Failure (F) or Success (T)

### 3.6.3.13 `std::vector<std::string> vomsdata::ListTargets ( void )`

Returns the list of targets.

### 3.6.3.14 `bool vomsdata::LoadCredentials ( X509 *, EVP_PKEY *, STACK_OF(X509)* )`

### 3.6.3.15 `bool vomsdata::LoadSystemContacts ( std::string dir = " " )`

Loads the system wide configuration files.

## Parameters

<i>dir</i>	The directory in which the files are stored.
------------	----------------------------------------------

If *dir* is empty, defaults to /opt/edg/etc/vomses.

## Returns

True if all went OK, false otherwise.

### 3.6.3.16 `bool vomsdata::LoadUserContacts ( std::string dir = " " )`

Loads the user-specific configuration files.

**Parameters**

<i>dir</i>	The directory in which the files are stored.
------------	----------------------------------------------

If *dir* is empty, defaults to \$VOMS\_USERCONF. If this is empty too, defaults to \$HOME/.edg/vomses, or to ~/.edg/vomses as a last resort.

**Returns**

True if all went OK, false otherwise.

**3.6.3.17 void vomsdata::Order ( std::string *att* )**

Sets up the ordering of the results.

```
Defines the ordering of the data returned by Contact(). Results are
ordered in the same order as the calls to this function.
\param att The attribute to be ordered.
```

**3.6.3.18 void vomsdata::ResetOrder ( void )**

Resets the ordering.

**3.6.3.19 void vomsdata::ResetTargets ( void )**

Resets the target list.

**3.6.3.20 bool vomsdata::Retrieve ( X509 \* *cert*, STACK\_OF(X509)\* *chain*, recurse\_type *how* = RECURSE\_CHAIN )**

Extracts the VOMS extension from an X.509 certificate. The function doesn't check the validity of the certificates, but it does check the content of the user data.

**Parameters**

<i>cert</i>	The certificate with the VOMS extensions
<i>chain</i>	The chain of the validation certificates (only the intermediate ones)
<i>how</i>	Recursion type

**Returns**

failure (F) or success (T)

**3.6.3.21 bool vomsdata::Retrieve ( X509\_EXTENSION \* *ext* )**

Gets VOMS information from the given extension

**Parameters**

<i>ext</i>	The extension to parse.
------------	-------------------------

**Returns**

failure (F) or success (T)

**3.6.3.22 bool vomldata::Retrieve ( FILE \* *file*, recurse\_type *how* )**

Gets VOMS information from a proxy saved as a file.

**Parameters**

<i>file</i>	the file name
<i>how</i>	Recursion type

**Returns**

failure (F) or success (T)

Note: Does NOT verify that the proxy is valid. Such verification must be obtained through other means.

**3.6.3.23 bool vomldata::Retrieve ( AC \* *ac* )**

Gets VOMS information from the AC

**Parameters**

<i>ext</i>	The extension to parse.
------------	-------------------------

**Returns**

failure (F) or success (T)

**3.6.3.24 bool vomldata::RetrieveFromCred ( gss\_cred\_id\_t *credential*, recurse\_type *how* )**

Gets VOMS information from the given globus credential

**Parameters**

<i>credential</i>	The credential from which to retrieve the certificate.
<i>how</i>	Recursion type

**Returns**

failure (F) or success (T)

**3.6.3.25 bool vomldata::RetrieveFromCtx ( gss\_ctx\_id\_t *context*, recurse\_type *how* )**

Gets VOMS information from the given globus context

**Parameters**

<i>context</i>	The context from which to retrieve the certificate.
<i>how</i>	Recursion type

**Returns**

failure (F) or success (T)

### 3.6.3.26 `bool vomsdata::RetrieveFromProxy ( recurse_type how )`

Gets VOMS information from an existing globus proxy

#### Parameters

<i>how</i>	Recursion type
------------	----------------

#### Returns

failure (F) or success (T)

### 3.6.3.27 `std::string vomsdata::ServerErrors ( void )`

Gets the error message returned by the server

### 3.6.3.28 `void vomsdata::SetLifetime ( int lifetime )`

Set requested lifetime for the [Contact\(\)](#) call.

#### Parameters

<i>lifetime</i>	Requested lifetime, in seconds
-----------------	--------------------------------

### 3.6.3.29 `void vomsdata::SetRetryCount ( int retryCount )`

### 3.6.3.30 `void vomsdata::SetVerificationTime ( time_t )`

### 3.6.3.31 `void vomsdata::SetVerificationType ( verify_type how )`

Sets the type of verification done on the data.

#### Parameters

<i>how</i>	The type of verification.
------------	---------------------------

## 3.6.4 Field Documentation

### 3.6.4.1 `std::vector<voms> vomsdata::data`

User's info, as in the certificate extension. It may contain data gathered from more than one VOMS server, Definition at line 368 of file voms\_api.h.

### 3.6.4.2 `error_type vomsdata::error`

Error code

Definition at line 213 of file voms\_api.h.

### 3.6.4.3 `std::string vomsdata::extra_data`

The data specified by the user with the `--include` switch.



Note that this field doesn't contain the result of a request to the VOMS server, but instead data specified by the user.

The reason for the introduction of this extension is to let a user include important data into his proxy certificate, like, for example, a kerberos ticket

Definition at line 372 of file voms\_api.h.

#### 3.6.4.4 std::string vomsdata::workvo

The value of the -vo option of the voms-proxy-init command

Definition at line 371 of file voms\_api.h.

The documentation for this struct was generated from the following file:

- [voms\\_api.h](#)



## Chapter 4

# File Documentation

### 4.1 voms\_api.h File Reference

```
#include <fstream>
#include <string>
#include <vector>
#include <openssl/x509.h>
#include <openssl/bio.h>
#include <sys/types.h>
#include "newformat.h"
```

#### Data Structures

- struct [data](#)  
*User's characteristics: can be repeated. Generic name-value attribute : can be repeated.*
- struct [attribute](#)
- struct [attributelist](#)
- struct [contactdata](#)
- struct [voms](#)
- struct [vomsdata](#)
- class **vomsdata::Initializer**

#### Macros

- #define [NOGLOBUS](#)

#### Typedefs

- typedef void \* [gss\\_cred\\_id\\_t](#)
- typedef void \* [gss\\_ctx\\_id\\_t](#)
- typedef bool(\* [check\\_sig](#))(X509 \*, void \*, [verror\\_type](#) &)

#### Enumerations

- enum [data\\_type](#) { [TYPE\\_NODATA](#), [TYPE\\_STD](#), [TYPE\\_CUSTOM](#) }  
*The type of data returned.*
- enum [recurse\\_type](#) { [RECURSE\\_CHAIN](#), [RECURSE\\_NONE](#), [RECURSE\\_DEEP](#) }

- enum `verify_type` {  
`VERIFY_FULL` = 0xffffffff, `VERIFY_NONE` = 0x00000000, `VERIFY_DATE` = 0x00000001, `VERIFY_TARGET` = 0x00000002,  
`VERIFY_KEY` = 0x00000004, `VERIFY_SIGN` = 0x00000008, `VERIFY_ORDER` = 0x00000010, `VERIFY_ID` = 0x00000020,  
`VERIFY_CERTLIST` = 0x00000040 }
  - enum `verror_type` {  
`VERR_NONE`, `VERR_NOCKET`, `VERR_NOIDENT`, `VERR_COMM`,  
`VERR_PARAM`, `VERR_NOEXT`, `VERR_NOINIT`, `VERR_TIME`,  
`VERR_IDCHECK`, `VERR_EXTRINFO`, `VERR_FORMAT`, `VERR_NODATA`,  
`VERR_PARSE`, `VERR_DIR`, `VERR_SIGN`, `VERR_SERVER`,  
`VERR_MEM`, `VERR_VERIFY`, `VERR_TYPE`, `VERR_ORDER`,  
`VERR_SERVERCODE`, `VERR_NOTAVAIL`, `VERR_FILE` }
- Error codes.*

## Functions

- int `getVOMSMajorVersionNumber` (void)
- int `getVOMSMinorVersionNumber` (void)
- int `getVOMSPatchVersionNumber` (void)

### 4.1.1 Macro Definition Documentation

#### 4.1.1.1 #define NOGLOBUS

Definition at line 33 of file `voms_api.h`.

### 4.1.2 Typedef Documentation

#### 4.1.2.1 typedef bool(\* check\_sig)(X509 \*, void \*, verror\_type &)

Definition at line 190 of file `voms_api.h`.

#### 4.1.2.2 typedef void\* gss\_cred\_id\_t

Definition at line 42 of file `voms_api.h`.

#### 4.1.2.3 typedef void\* gss\_ctx\_id\_t

Definition at line 43 of file `voms_api.h`.

### 4.1.3 Enumeration Type Documentation

#### 4.1.3.1 enum data\_type

The type of data returned.

Enumerator:

- `TYPE_NODATA`** no data
- `TYPE_STD`** group, role, capability triplet
- `TYPE_CUSTOM`** result of an S command

Definition at line 77 of file `voms_api.h`.

## 4.1.3.2 enum recurse\_type

Enumerator:

**RECURSE\_CHAIN**  
**RECURSE\_NONE**  
**RECURSE\_DEEP**

Definition at line 143 of file voms\_api.h.

## 4.1.3.3 enum verify\_type

Enumerator:

**VERIFY\_FULL**  
**VERIFY\_NONE**  
**VERIFY\_DATE**  
**VERIFY\_TARGET**  
**VERIFY\_KEY**  
**VERIFY\_SIGN**  
**VERIFY\_ORDER**  
**VERIFY\_ID**  
**VERIFY\_CERTLIST**

Definition at line 149 of file voms\_api.h.

## 4.1.3.4 enum verror\_type

Error codes.

Enumerator:

**VERR\_NONE**  
**VERR\_NOSOCKET** Socket problem  
**VERR\_NOIDENT** Cannot identify itself (certificate problem)  
**VERR\_COMM** Server problem  
**VERR\_PARAM** Wrong parameters  
**VERR\_NOEXT** VOMS extension missing  
**VERR\_NOINIT** Initialization error  
**VERR\_TIME** Error in time checking  
**VERR\_IDCHECK** User data in extension different from the real ones  
**VERR\_EXTRAINFO** VO name and URI missing  
**VERR\_FORMAT** Wrong data format  
**VERR\_NODATA** Empty extension  
**VERR\_PARSE** Parse error  
**VERR\_DIR** Directory error  
**VERR\_SIGN** Signature error  
**VERR\_SERVER** Unidentifiable VOMS server  
**VERR\_MEM** Memory problems  
**VERR\_VERIFY** Generic verification error

***VERR\_TYPE*** Returned data of unknown type

***VERR\_ORDER*** Ordering different than required

***VERR\_SERVERCODE*** Error message from the server

***VERR\_NOTAVAIL*** Method not available

***VERR\_FILE*** Error reading data from file

Definition at line 163 of file voms\_api.h.

#### 4.1.4 Function Documentation

4.1.4.1 int getVOMSMajorVersionNumber ( void )

4.1.4.2 int getVOMSMinorVersionNumber ( void )

4.1.4.3 int getVOMSPatchVersionNumber ( void )

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