

# VOMS C API

## 1.5.0

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# Chapter 1

## Data Structure Index

### 1.1 Data Structures

Here are the data structures with brief descriptions:

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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_apic.h>
```

#### Data Fields

- const char \* [name](#)
- const char \* [value](#)
- const char \* [qualifier](#)

#### 3.1.1 Detailed Description

Definition at line 39 of file voms\_apic.h.

#### 3.1.2 Field Documentation

##### 3.1.2.1 const char\* attribute::name

Definition at line 40 of file voms\_apic.h.

##### 3.1.2.2 const char\* attribute::value

Definition at line 41 of file voms\_apic.h.

##### 3.1.2.3 const char\* attribute::qualifier

Definition at line 42 of file voms\_apic.h.

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

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

## 3.2 contactdata Struct Reference

```
#include <voms_apic.h>
```

### Data Fields

- char \* [nick](#)
- char \* [host](#)
- char \* [contact](#)
- char \* [vo](#)
- int [port](#)
- char \* [reserved](#)
- int [version](#)

### 3.2.1 Detailed Description

Definition at line 45 of file voms\_apic.h.

### 3.2.2 Field Documentation

#### 3.2.2.1 char\* 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 VOMS\_FindBy\* functions. The alias of the server

Definition at line 48 of file voms\_apic.h.

#### 3.2.2.2 char\* contactdata::host

The hostname of the server

Definition at line 49 of file voms\_apic.h.

#### 3.2.2.3 char\* contactdata::contact

The subject of the server's certificate

Definition at line 50 of file voms\_apic.h.

#### 3.2.2.4 char\* contactdata::vo

The VO served by this server

Definition at line 51 of file voms\_apic.h.

#### 3.2.2.5 int contactdata::port

The port on which the server is listening

Definition at line 52 of file voms\_apic.h.

### 3.2.2.6 char\* contactdata::reserved

HANDS OFF!

Definition at line 53 of file voms\_apic.h.

### 3.2.2.7 int contactdata::version

The version of Globus on which this server runs.

Definition at line 54 of file voms\_apic.h.

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

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

## 3.3 data Struct Reference

User's characteristics: can be repeated.

```
#include <voms_apic.h>
```

### Data Fields

- char \* [group](#)
- char \* [role](#)
- char \* [cap](#)

### 3.3.1 Detailed Description

User's characteristics: can be repeated.

<

Definition at line 33 of file voms\_apic.h.

### 3.3.2 Field Documentation

#### 3.3.2.1 char\* data::group

user's group

Definition at line 34 of file voms\_apic.h.

#### 3.3.2.2 char\* data::role

user's role

Definition at line 35 of file voms\_apic.h.

#### 3.3.2.3 char\* data::cap

user's capability

Definition at line 36 of file voms\_apic.h.

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

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

## 3.4 voms Struct Reference

```
#include <voms_apic.h>
```

### Data Fields

- int [siglen](#)
- char \* [signature](#)
- char \* [user](#)
- char \* [userca](#)
- char \* [server](#)
- char \* [serverca](#)
- char \* [voname](#)
- char \* [uri](#)
- char \* [date1](#)
- char \* [date2](#)
- int [type](#)
- struct [data](#) \*\* [std](#)
- char \* [custom](#)
- int [datalen](#)
- int [version](#)
- char \*\* [fqan](#)
- char \* [serial](#)
- AC \* [ac](#)
- X509 \* [holder](#)

### 3.4.1 Detailed Description

Definition at line 65 of file voms\_apic.h.

### 3.4.2 Field Documentation

#### 3.4.2.1 int voms::siglen

The length of the VOMS server signature

Definition at line 66 of file voms\_apic.h.

#### 3.4.2.2 char\* voms::signature

The VOMS server signature

Definition at line 67 of file voms\_apic.h.

#### 3.4.2.3 char\* voms::user

The user's DN, as from his certificate

Definition at line 68 of file voms\_apic.h.

**3.4.2.4 char\* voms::userca**

The CA which signed the user's certificate

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

**3.4.2.5 char\* voms::server**

The VOMS server DN, as from its certificate

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

**3.4.2.6 char\* voms::serverca**

The CA which signed the VOMS certificate

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

**3.4.2.7 char\* voms::voname**

The name of the VO to which the VOMS belongs

Definition at line 72 of file voms\_apic.h.

**3.4.2.8 char\* voms::uri**

The URI of the VOMS server

Definition at line 73 of file voms\_apic.h.

**3.4.2.9 char\* voms::date1**

Beginning of validity of the user info

Definition at line 74 of file voms\_apic.h.

**3.4.2.10 char\* voms::date2**

End of validity of the user info

Definition at line 75 of file voms\_apic.h.

**3.4.2.11 int voms::type**

The type of [data](#) returned

Definition at line 76 of file voms\_apic.h.

**3.4.2.12 struct data\*\* voms::std** [read]

User's characteristics

Definition at line 77 of file voms\_apic.h.

**3.4.2.13 char\* voms::custom**

The [data](#) returned by an S command

Definition at line 78 of file voms\_apic.h.

**3.4.2.14 int voms::datalen**

Definition at line 79 of file voms\_apic.h.

**3.4.2.15 int voms::version**

Definition at line 80 of file voms\_apic.h.

**3.4.2.16 char\*\* voms::fqan**

User's attributes in compact format

Definition at line 81 of file voms\_apic.h.

**3.4.2.17 char\* voms::serial**

Serial number. Only significant if coming from AC. Null otherwise

Definition at line 82 of file voms\_apic.h.

**3.4.2.18 AC\* voms::ac**

Definition at line 85 of file voms\_apic.h.

**3.4.2.19 X509\* voms::holder**

Definition at line 86 of file voms\_apic.h.

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

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

## 3.5 vomsdata Struct Reference

```
#include <voms_apic.h>
```

### Data Fields

- char \* [cdir](#)
- char \* [vdir](#)
- struct [voms](#) \*\* [data](#)
- char \* [workvo](#)
- char \* [extra\\_data](#)
- int [volen](#)
- int [extralen](#)
- struct [vomsdata](#) \* [real](#)

### 3.5.1 Detailed Description

Definition at line 129 of file [voms\\_apic.h](#).

### 3.5.2 Field Documentation

#### 3.5.2.1 char\* vomsdata::cdir

Definition at line 130 of file [voms\\_apic.h](#).

#### 3.5.2.2 char\* vomsdata::vdir

Definition at line 131 of file [voms\\_apic.h](#).

#### 3.5.2.3 struct voms\*\* vomsdata::data [read]

User's info, as in the certificate extension. It may contain [data](#) gathered from more than one VOMS server.  
Definition at line 132 of file [voms\\_apic.h](#).

#### 3.5.2.4 char\* vomsdata::workvo

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

Definition at line 135 of file [voms\\_apic.h](#).

#### 3.5.2.5 char\* 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 137 of file [voms\\_apic.h](#).



#### 3.5.2.6 int vomsdata::volen

Definition at line 146 of file voms\_apic.h.

#### 3.5.2.7 int vomsdata::extralen

Definition at line 147 of file voms\_apic.h.

#### 3.5.2.8 struct vomsdata\* vomsdata::real [read]

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

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

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



# Chapter 4

## File Documentation

### 4.1 voms\_apic.h File Reference

```
#include <openssl/x509.h>
#include <time.h>
#include "newformat.h"
```

#### Data Structures

- struct [data](#)  
*User's characteristics: can be repeated.*
- struct [attribute](#)
- struct [contactdata](#)
- struct [voms](#)
- struct [vomsdata](#)

#### Defines

- #define [TYPE\\_NODATA](#) 0
- #define [TYPE\\_STD](#) 1
- #define [TYPE\\_CUSTOM](#) 2
- #define [RECURSE\\_CHAIN](#) 0
- #define [RECURSE\\_NONE](#) 1
- #define [VERIFY\\_FULL](#) 0xffffffff
- #define [VERIFY\\_NONE](#) 0x00000000
- #define [VERIFY\\_DATE](#) 0x00000001
- #define [VERIFY\\_NOTARGET](#) 0x00000002
- #define [VERIFY\\_KEY](#) 0x00000004
- #define [VERIFY\\_SIGN](#) 0x00000008
- #define [VERIFY\\_ORDER](#) 0x00000010
- #define [VERIFY\\_ID](#) 0x00000020
- #define [VERIFY\\_CERTLIST](#) 0x00000040
- #define [VERR\\_NONE](#) 0

*Error codes.*

- #define [VERR\\_NOSOCKET](#) 1
- #define [VERR\\_NOIDENT](#) 2
- #define [VERR\\_COMM](#) 3
- #define [VERR\\_PARAM](#) 4
- #define [VERR\\_NOEXT](#) 5
- #define [VERR\\_NOINIT](#) 6
- #define [VERR\\_TIME](#) 7
- #define [VERR\\_IDCHECK](#) 8
- #define [VERR\\_EXTRAINFO](#) 9
- #define [VERR\\_FORMAT](#) 10
- #define [VERR\\_NODATA](#) 11
- #define [VERR\\_PARSE](#) 12
- #define [VERR\\_DIR](#) 13
- #define [VERR\\_SIGN](#) 14
- #define [VERR\\_SERVER](#) 15
- #define [VERR\\_MEM](#) 16
- #define [VERR\\_VERIFY](#) 17
- #define [VERR\\_TYPE](#) 18
- #define [VERR\\_ORDER](#) 19
- #define [VERR\\_SERVERCODE](#) 20
- #define [VERR\\_NOTAVAIL](#) 21

## Typedefs

- typedef void \* [gss\\_cred\\_id\\_t](#)
- typedef void \* [gss\\_ctx\\_id\\_t](#)

## Functions

- struct [contactdata](#) \*\* [VOMS\\_FindByAlias](#) (struct [vomsdata](#) \*vd, char \*alias, char \*system, char \*user, int \*error)
- struct [contactdata](#) \*\* [VOMS\\_FindByVO](#) (struct [vomsdata](#) \*vd, char \*vo, char \*system, char \*user, int \*error)
- void [VOMS\\_DeleteContacts](#) (struct [contactdata](#) \*\*list)
- struct [vomsdata](#) \* [VOMS\\_Init](#) (char \*voms, char \*cert)
- struct [voms](#) \* [VOMS\\_Copy](#) (struct [voms](#) \*v, int \*error)
- struct [vomsdata](#) \* [VOMS\\_CopyAll](#) (struct [vomsdata](#) \*vd, int \*error)
- void [VOMS\\_Delete](#) (struct [voms](#) \*v)
- int [VOMS\\_AddTarget](#) (struct [vomsdata](#) \*vd, char \*target, int \*error)
- void [VOMS\\_FreeTargets](#) (struct [vomsdata](#) \*vd, int \*error)
- char \* [VOMS\\_ListTargets](#) (struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_SetVerificationType](#) (int type, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_SetLifetime](#) (int length, struct [vomsdata](#) \*vd, int \*error)
- void [VOMS\\_Destroy](#) (struct [vomsdata](#) \*vd)
- int [VOMS\\_ResetOrder](#) (struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_Ordering](#) (char \*order, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_Contact](#) (char \*hostname, int port, char \*servsubject, char \*command, struct [vomsdata](#) \*vd, int \*error)

- int [VOMS\\_ContactRaw](#) (char \*hostname, int port, char \*servsubject, char \*command, void \*\*data, int \*datalen, int \*version, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_Retrieve](#) (X509 \*cert, STACK\_OF(X509)\*chain, int how, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_Import](#) (char \*buffer, int buflen, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_Export](#) (char \*\*buffer, int \*buflen, struct [vomsdata](#) \*vd, int \*error)
- struct [voms](#) \* [VOMS\\_DefaultData](#) (struct [vomsdata](#) \*vd, int \*error)
- char \* [VOMS\\_ErrorMessage](#) (struct [vomsdata](#) \*vd, int error, char \*buffer, int len)
- int [VOMS\\_RetrieveEXT](#) (X509\_EXTENSION \*ext, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_RetrieveFromCred](#) (gss\_cred\_id\_t cred, int how, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_RetrieveFromFile](#) (FILE \*file, int how, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_RetrieveFromCtx](#) (gss\_ctx\_id\_t ctx, int how, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_RetrieveFromProxy](#) (int how, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_GetAttributeSourcesNumber](#) (struct [voms](#) \*v, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_GetAttributeSourceHandle](#) (struct [voms](#) \*v, int num, struct [vomsdata](#) \*vd, int \*error)
- const char \* [VOMS\\_GetAttributeGrantor](#) (struct [voms](#) \*v, int handle, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_GetAttributesNumber](#) (struct [voms](#) \*v, int handle, struct [vomsdata](#) \*vd, int \*error)
- int [VOMS\\_GetAttribute](#) (struct [voms](#) \*v, int handle, int num, struct [attribute](#) \*at, struct [vomsdata](#) \*vd, int \*error)
- struct [vomsdata](#) \* [VOMS\\_Duplicate](#) (struct [vomsdata](#) \*vd)
- AC \* [VOMS\\_GetAC](#) (struct [voms](#) \*v)
- int [getMajorVersionNumber](#) (void)
- int [getMinorVersionNumber](#) (void)
- int [getPatchVersionNumber](#) (void)
- int [VOMS\\_SetVerificationTime](#) (time\_t verificationtime, struct [vomsdata](#) \*vd, int \*error)
- char \*\* [VOMS\\_GetTargetsList](#) (struct [voms](#) \*v, struct [vomsdata](#) \*vd, int \*error)
- void [VOMS\\_FreeTargetsList](#) (char \*\*)
- int [VOMS\\_SetTimeout](#) (int t, struct [vomsdata](#) \*vd, int \*error)

## 4.1.1 Define Documentation

### 4.1.1.1 #define RECURSE\_CHAIN 0

Definition at line 90 of file voms\_apic.h.

### 4.1.1.2 #define RECURSE\_NONE 1

Definition at line 91 of file voms\_apic.h.

### 4.1.1.3 #define TYPE\_CUSTOM 2

result of an S command

Definition at line 62 of file voms\_apic.h.

### 4.1.1.4 #define TYPE\_NODATA 0

no [data](#)

Definition at line 60 of file voms\_apic.h.

**4.1.1.5 #define TYPE\_STD 1**

group, role, capability triplet

Definition at line 61 of file voms\_apic.h.

**4.1.1.6 #define VERIFY\_CERTLIST 0x00000040**

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

**4.1.1.7 #define VERIFY\_DATE 0x00000001**

Definition at line 95 of file voms\_apic.h.

**4.1.1.8 #define VERIFY\_FULL 0xffffffff**

Definition at line 93 of file voms\_apic.h.

**4.1.1.9 #define VERIFY\_ID 0x00000020**

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

**4.1.1.10 #define VERIFY\_KEY 0x00000004**

Definition at line 97 of file voms\_apic.h.

**4.1.1.11 #define VERIFY\_NONE 0x00000000**

Definition at line 94 of file voms\_apic.h.

**4.1.1.12 #define VERIFY\_NOTARGET 0x00000002**

Definition at line 96 of file voms\_apic.h.

**4.1.1.13 #define VERIFY\_ORDER 0x00000010**

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

**4.1.1.14 #define VERIFY\_SIGN 0x00000008**

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

**4.1.1.15 #define VERR\_COMM 3**

Server problem

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

**4.1.1.16 #define VERR\_DIR 13**

Directory error

Definition at line 119 of file voms\_apic.h.

**4.1.1.17 #define VERR\_EXTRINFO 9**

VO name and URI missing

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

**4.1.1.18 #define VERR\_FORMAT 10**

Wrong [data](#) format

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

**4.1.1.19 #define VERR\_IDCHECK 8**

User [data](#) in extension different from the real ones

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

**4.1.1.20 #define VERR\_MEM 16**

Memory problems

Definition at line 122 of file voms\_apic.h.

**4.1.1.21 #define VERR\_NODATA 11**

Empty extension

Definition at line 117 of file voms\_apic.h.

**4.1.1.22 #define VERR\_NOEXT 5**

VOMS extension missing

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

**4.1.1.23 #define VERR\_NOIDENT 2**

Cannot identify itself (certificate problem)

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

**4.1.1.24 #define VERR\_NOINIT 6**

Initialization error

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

**4.1.1.25 #define VERR\_NONE 0**

Error codes.

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

**4.1.1.26 #define VERR\_NOSOCKET 1**

Socket problem

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

**4.1.1.27 #define VERR\_NOTAVAIL 21**

Method not available

Definition at line 127 of file voms\_apic.h.

**4.1.1.28 #define VERR\_ORDER 19**

Ordering different than required

Definition at line 125 of file voms\_apic.h.

**4.1.1.29 #define VERR\_PARAM 4**

Wrong parameters

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

**4.1.1.30 #define VERR\_PARSE 12**

Parse error

Definition at line 118 of file voms\_apic.h.

**4.1.1.31 #define VERR\_SERVER 15**

Unidentifiable VOMS server

Definition at line 121 of file voms\_apic.h.

**4.1.1.32 #define VERR\_SERVERCODE 20**

Error from the server

Definition at line 126 of file voms\_apic.h.

**4.1.1.33 #define VERR\_SIGN 14**

Signature error

Definition at line 120 of file voms\_apic.h.



#### 4.1.1.34 `#define VERR_TIME 7`

Error in time checking

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

#### 4.1.1.35 `#define VERR_TYPE 18`

Returned [data](#) of unknown type

Definition at line 124 of file voms\_apic.h.

#### 4.1.1.36 `#define VERR_VERIFY 17`

Generic verification error

Definition at line 123 of file voms\_apic.h.

### 4.1.2 Typedef Documentation

#### 4.1.2.1 `typedef void* gss_cred_id_t`

Definition at line 20 of file voms\_apic.h.

#### 4.1.2.2 `typedef void* gss_ctx_id_t`

Definition at line 21 of file voms\_apic.h.

### 4.1.3 Function Documentation

#### 4.1.3.1 `int getMajorVersionNumber (void)`

#### 4.1.3.2 `int getMinorVersionNumber (void)`

#### 4.1.3.3 `int getPatchVersionNumber (void)`

#### 4.1.3.4 `int VOMS_AddTarget (struct vomsdata * vd, char * target, int * error)`

Adds a target to the AC.

##### Parameters:

*vd* The [vomsdata](#) structure.

*target* The target to add. It should be a FQDN.

*error* RETURN PARAMETER: qualifies the error message.

##### Returns:

failure (0) or success (<>0)

#### 4.1.3.5 **int VOMS\_Contact** (char \* *hostname*, int *port*, char \* *servsubject*, char \* *command*, struct vomsdata \* *vd*, int \* *error*)

Contacts a VOMS server to get a certificate

It is the equivalent of the voms\_proxy\_init command, but without the --include functionality.

##### Parameters:

*hostname* FQDN of the VOMS server  
*port* the port on which the VOMS server is listening  
*servsubject* the subject of the server's certificate  
*command* Command  
*vd* RETURN PARAMETER: contains the [data](#) returned by the connection  
*error* RETURN PARAMETER: Qualifies the error message

##### Returns:

failure (0) or success (<>0)

#### 4.1.3.6 **int VOMS\_ContactRaw** (char \* *hostname*, int *port*, char \* *servsubject*, char \* *command*, void \*\* *data*, int \* *datalen*, int \* *version*, struct vomsdata \* *vd*, int \* *error*)

The same as VOMS\_Contact, except that instead of starting the verification process, the [data](#) is returned as is in the

##### Parameters:

[data](#) and *datalen* fields.  
*hostname* FQDN of the VOMS server  
*port* the port on which the VOMS server is listening  
*servsubject* the subject of the server's certificate  
*command* the command sent to the server  
*version* is the version number of the [data](#).  
*vd* RETURN PARAMETER: contains the [data](#) returned by the connection  
*error* RETURN PARAMETER: Qualifies the error message

##### Returns:

failure (0) or success (<>0)

#### 4.1.3.7 **struct voms\* VOMS\_Copy** (struct voms \* *v*, int \* *error*) [read]

Copies a [voms](#) structure. N.B: This is the ONLY way to correctly initialize a [voms](#) structure as a copy of another [voms](#) structure.

##### Parameters:

*v* The structure to copy.

*error* RETURN PARAMETER: qualifies the error message.

**Returns:**

NULL (error) or the new [voms](#) structure.

**4.1.3.8 struct vomsdata\* VOMS\_CopyAll (struct vomsdata \* *vd*, int \* *error*)** [read]

Copies a [vomsdata](#) structure. N.B: This is the ONLY way to correctly initialize a [vomsdata](#) structure as a copy of another [vomsdata](#) structure.

**Parameters:**

*vd* The structure to copy.

*error* RETURN PARAMETER: qualifies the error message.

**Returns:**

NULL (error) or the new [vomsdata](#) structure.

**4.1.3.9 struct voms\* VOMS\_DefaultData (struct vomsdata \* *vd*, int \* *error*)** [read]

Gets the default attributes from a [vomsdata](#) structure.

**Parameters:**

*vd* the [vomsdata](#) structure to analyze

*error* RETURN PARAMETER: Qualifies the error message

**Returns:**

a pointer to the relevant [voms](#) structure. DO NOT modify the fields.

**4.1.3.10 void VOMS\_Delete (struct voms \* *v*)**

Deletes a [voms](#) structure

**Parameters:**

*v* Pointer to the structure to delete.

**4.1.3.11 void VOMS\_DeleteContacts (struct contactdata \*\* *list*)**

Frees a [contactdata](#) vector.

**Parameters:**

*list* The vector to free.

**Returns:**

NONE

#### 4.1.3.12 void VOMS\_Destroy (struct vomsdata \* *vd*)

Destroys a proper [vomsdata](#) structure /param *vd* The structure to deallocate.

#### 4.1.3.13 struct vomsdata\* VOMS\_Duplicate (struct vomsdata \* *vd*) [read]

#### 4.1.3.14 char\* VOMS\_ErrorMessage (struct vomsdata \* *vd*, int *error*, char \* *buffer*, int *len*)

Gets a textual description of the error.

##### Parameters:

*vd* The [vomsdata](#) structure to analyze

*error* The error returned by the last function

*buffer* A pointer to a buffer where the error message will be written. If NULL, then memory is allocated by the function, and will have to be free()ed by the caller.

*len* The length of the memory pointed to by the buffer parameter.

##### Returns:

A pointer to the error message.

#### 4.1.3.15 int VOMS\_Export (char \*\* *buffer*, int \* *buflen*, struct vomsdata \* *vd*, int \* *error*)

Converts [data](#) into a test format

##### Parameters:

*buffer* OUTPUT PARAMETER contains the converted [data](#)

*buflen* OUTPUT PARAMETER contains the length of buffer

*vd* contains the [data](#) to convert

*error* RETURN PARAMETER Qualifies the error message

##### Returns:

failure (0) or success (<>0)

#### 4.1.3.16 struct contactdata\*\* VOMS\_FindByAlias (struct vomsdata \* *vd*, char \* *alias*, char \* *system*, char \* *user*, int \* *error*) [read]

Gets a list of VOMS servers which share an alias.

##### Parameters:

*vd* The correctly initialized [vomsdata](#) structured.

*alias* The alias to look for.

*system* The directory in which to look for the system configuration files. If NULL, defaults to /opt/edc/etc/vomses

*user* The directory in which to look for the user configuration files. Defaults to \$VOMS\_USERCONF if NULL. Again defaults to \$HOME/.edg/vomses if the latter is NULL, or to ~/.edg/vomses as a last resort.

**error** RETURN PARAMETER: qualifies the error message.

**Returns:**

NULL, or a NULL-terminated vector of [contactdata](#) structures. The only supported way to free this array is via the VOMS\_DeleteContacts function. Note also that the order in which the servers are returned is unspecified.

**4.1.3.17 struct contactdata\*\* VOMS\_FindByVO (struct vomsdata \* *vd*, char \* *vo*, char \* *system*, char \* *user*, int \* *error*)** [read]

Gets a list of VOMS servers which serve the same VO.

**Parameters:**

***vd*** The correctly initialized [vomsdata](#) structured.

***vo*** The VO to look for.

***system*** The directory in which to look for the system configuration files. If NULL, defaults to /opt/edc/etc/vomses

***user*** The directory in which to look for the user configuration files. Defaults to \$VOMS\_USERCONF if NULL. Again defaults to \$HOME/.edg/vomses if the latter is NULL, or to ~/.edg/vomses as a last resort.

**error** RETURN PARAMETER: qualifies the error message.

**Returns:**

NULL, or a NULL-terminated vector of [contactdata](#) structures. The only supported way to free this array is via the VOMS\_DeleteContacts function. Note also that the order in which the servers are returned is unspecified.

**4.1.3.18 void VOMS\_FreeTargets (struct vomsdata \* *vd*, int \* *error*)**

Delete the targets from the AC.

**Parameters:**

***vd*** The [vomsdata](#) structure.

**error** RETURN PARAMETER: qualifies the error message.

- 4.1.3.19** void VOMS\_FreeTargetsList (char \*\*)
- 4.1.3.20** AC\* VOMS\_GetAC (struct voms \* *v*)
- 4.1.3.21** int VOMS\_GetAttribute (struct voms \* *v*, int *handle*, int *num*, struct attribute \* *at*, struct vomsdata \* *vd*, int \* *error*)
- 4.1.3.22** const char\* VOMS\_GetAttributeGrantor (struct voms \* *v*, int *handle*, struct vomsdata \* *vd*, int \* *error*)
- 4.1.3.23** int VOMS\_GetAttributesNumber (struct voms \* *v*, int *handle*, struct vomsdata \* *vd*, int \* *error*)
- 4.1.3.24** int VOMS\_GetAttributeSourceHandle (struct voms \* *v*, int *num*, struct vomsdata \* *vd*, int \* *error*)
- 4.1.3.25** int VOMS\_GetAttributeSourcesNumber (struct voms \* *v*, struct vomsdata \* *vd*, int \* *error*)
- 4.1.3.26** char\*\* VOMS\_GetTargetsList (struct voms \* *v*, struct vomsdata \* *vd*, int \* *error*)
- 4.1.3.27** int VOMS\_Import (char \* *buffer*, int *buflen*, struct vomsdata \* *vd*, int \* *error*)

Converts [data](#) from the format used for inclusion into a certificate to the internal format

The function does verify the [data](#).

**Parameters:**

*buffer* contains the [data](#) to be converted  
*buflen* contains the length of buffer  
*vd* RETURN PARAMETER: contains the [data](#) returned by the connection  
*error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

- 4.1.3.28** struct vomsdata\* VOMS\_Init (char \* *voms*, char \* *cert*) [[read](#)]

Initializes a [vomsdata](#) structure for use by the other functions. N.B: This is the ONLY way to correctly initialize a [vomsdata](#) structure. It is also forbidden to directly take the sizeof() of this structure.

**Parameters:**

*voms* The directory which contains the certificates of the VOMS servers  
*cert* The directory which contains the CA certificates

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

**Returns:**

NULL for failure, or a pointer to a properly initialized structure.

**4.1.3.29 char\* VOMS\_ListTargets (struct vomsdata \* *vd*, int \* *error*)****4.1.3.30 int VOMS\_Ordering (char \* *order*, struct vomsdata \* *vd*, int \* *error*)**

Further specified the order of the returned attributes. Please do note that calls are cumulative unless [VOMS\\_ResetOrder\(\)](#) is called.

**Parameters:**

*order* the group:role [attribute](#).

*vd* RETURN PARAMETER: contains the modified [data](#).

*error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.3.31 int VOMS\_ResetOrder (struct vomsdata \* *vd*, int \* *error*)**

Unsets the return order of the attributes.

**Parameters:**

*vd* RETURN PARAMETER: contains the modified [data](#).

*error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.3.32 int VOMS\_Retrieve (X509 \* *cert*, STACK\_OF(X509)\* *chain*, int *how*, struct vomsdata \* *vd*, int \* *error*)**

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:**

*cert* The certificate with the VOMS extensions

*chain* The chain of the validation certificates (only the intermediate ones)

*how* Recursion type

*vd* RETURN PARAMETER: contains the [data](#) returned by the connection

*error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

#### 4.1.3.33 int VOMS\_RetrieveEXT (X509\_EXTENSION \* *ext*, struct vomsdata \* *vd*, int \* *error*)

Gets VOMS information from the given extension

##### Parameters:

*ext* The extension to parse.

*vd* RETURN PARAMETER: contains the [data](#) returned by the connection

*error* RETURN PARAMETER: Qualifies the error message

##### Returns:

failure (0) or success (<>0)

#### 4.1.3.34 int VOMS\_RetrieveFromCred (gss\_cred\_id\_t *cred*, int *how*, struct vomsdata \* *vd*, int \* *error*)

Gets VOMS information from the given globus credential

##### Parameters:

*cred* The credential from which to retrieve the certificate.

*how* Recursion type

*vd* RETURN PARAMETER: contains the [data](#) returned by the connection

*error* RETURN PARAMETER: Qualifies the error message

##### Returns:

failure (0) or success (<>0)

#### 4.1.3.35 int VOMS\_RetrieveFromCtx (gss\_ctx\_id\_t *ctx*, int *how*, struct vomsdata \* *vd*, int \* *error*)

Gets VOMS information from the given globus context

##### Parameters:

*ctx* The context from which to retrieve the certificate.

*how* Recursion type

*vd* RETURN PARAMETER: contains the [data](#) returned by the connection

*error* RETURN PARAMETER: Qualifies the error message

##### Returns:

failure (0) or success (<>0)



**4.1.3.36 int VOMS\_RetrieveFromFile (FILE \**file*, int *how*, struct vomsdata \* *vd*, int \* *error*)**

Gets VOMS information from the given globus credential

**Parameters:**

- file* The file from which to retrieve the certificate.
- how* Recursion type
- vd* RETURN PARAMETER: contains the [data](#) returned by the connection
- error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.3.37 int VOMS\_RetrieveFromProxy (int *how*, struct vomsdata \* *vd*, int \* *error*)**

Gets VOMS information from an existing globus proxy

**Parameters:**

- how* Recursion type
- vd* RETURN PARAMETER: contains the [data](#) returned by the connection
- error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.3.38 int VOMS\_SetLifetime (int *length*, struct vomsdata \* *vd*, int \* *error*)**

Set requested lifetime for [VOMS\\_Contact\(\)](#) calls.

**Parameters:**

- length* Lifetime requested.
- vd* RETURN PARAMETER: contains the modified [data](#).
- error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.3.39 int VOMS\_SetTimeout (int *t*, struct vomsdata \* *vd*, int \* *error*)****4.1.3.40 int VOMS\_SetVerificationTime (time\_t *verificationtime*, struct vomsdata \* *vd*, int \* *error*)****4.1.3.41 int VOMS\_SetVerificationType (int *type*, struct vomsdata \* *vd*, int \* *error*)**

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