

# VOMS C 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

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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 62 of file voms\_apic.h.

#### 3.1.2 Field Documentation

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

Definition at line 63 of file voms\_apic.h.

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

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

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

Definition at line 64 of file voms\_apic.h.

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

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

### 3.2 contactdata Struct Reference

The type of data returned.

```
#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

The type of data returned.

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

### 3.2.2 Field Documentation

#### 3.2.2.1 char\* contactdata::contact

The subject of the server's certificate

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

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

The hostname of the server

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

#### 3.2.2.3 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 71 of file voms\_apic.h.

#### 3.2.2.4 int contactdata::port

The port on which the server is listening

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

#### 3.2.2.5 char\* contactdata::reserved

HANDS OFF!

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

#### 3.2.2.6 int contactdata::version

The version of Globus on which this server runs.

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

### 3.2.2.7 char\* contactdata::vo

The VO served by this server

Definition at line 74 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 56 of file voms\_apic.h.

### 3.3.2 Field Documentation

#### 3.3.2.1 char\* data::cap

user's capability

Definition at line 59 of file voms\_apic.h.

#### 3.3.2.2 char\* data::group

user's group

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

#### 3.3.2.3 char\* data::role

user's role

Definition at line 58 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 88 of file `voms_apic.h`.

### 3.4.2 Field Documentation

#### 3.4.2.1 AC\* voms::ac

Definition at line 108 of file `voms_apic.h`.

#### 3.4.2.2 char\* voms::custom

The data returned by an S command

Definition at line 101 of file `voms_apic.h`.

#### 3.4.2.3 int voms::datalen

Definition at line 102 of file `voms_apic.h`.

#### 3.4.2.4 char\* voms::date1

Beginning of validity of the user info

Definition at line 97 of file `voms_apic.h`.



#### 3.4.2.5 char\* voms::date2

End of validity of the user info

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

#### 3.4.2.6 char\*\* voms::fqan

User's attributes in compact format

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

#### 3.4.2.7 X509\* voms::holder

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

#### 3.4.2.8 char\* voms::serial

Serial number. Only significant if coming from AC.

Null otherwise

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

#### 3.4.2.9 char\* voms::server

The VOMS server DN, as from its certificate

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

#### 3.4.2.10 char\* voms::serverca

The CA which signed the VOMS certificate

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

#### 3.4.2.11 int voms::siglen

The length of the VOMS server signature

Definition at line 89 of file voms\_apic.h.

#### 3.4.2.12 char\* voms::signature

The VOMS server signature

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

#### 3.4.2.13 struct data\*\* voms::std

User's characteristics

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

#### 3.4.2.14 int voms::type

The type of data returned

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

#### 3.4.2.15 char\* voms::uri

The URI of the VOMS server

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

#### 3.4.2.16 char\* voms::user

The user's DN, as from his certificate

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

#### 3.4.2.17 char\* voms::userca

The CA which signed the user's certificate

Definition at line 92 of file voms\_apic.h.

#### 3.4.2.18 int voms::version

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

#### 3.4.2.19 char\* voms::vname

The name of the VO to which the VOMS belongs

Definition at line 95 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 153 of file voms\_apic.h.

### 3.5.2 Field Documentation

#### 3.5.2.1 `char* vomsdata::cdir`

Definition at line 154 of file voms\_apic.h.

#### 3.5.2.2 `struct 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 156 of file voms\_apic.h.

#### 3.5.2.3 `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 161 of file voms\_apic.h.

#### 3.5.2.4 `int vomsdata::extralen`

Definition at line 171 of file voms\_apic.h.

#### 3.5.2.5 `struct vomsdata* vomsdata::real`

Definition at line 173 of file voms\_apic.h.

#### 3.5.2.6 `char* vomsdata::vdir`

Definition at line 155 of file voms\_apic.h.

#### 3.5.2.7 `int vomsdata::volen`

Definition at line 170 of file voms\_apic.h.

#### 3.5.2.8 `char* vomsdata::workvo`

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

Definition at line 159 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](#)  
*The type of data returned.*
- struct [voms](#)
- struct [vomsdata](#)

#### Macros

- #define [NOGLOBUS](#)
- #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_EXTRINFO 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\\_RetrieveFromAC](#) (AC \*ac, 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)
- int [VOMS\\_LoadCredentials](#) (X509 \*cert, EVP\_PKEY \*pkey, STACK\_OF(X509)\*chain, struct [vomsdata](#) \*vd, int \*error)

#### 4.1.1 Macro Definition Documentation

##### 4.1.1.1 #define NOGLOBUS

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

##### 4.1.1.2 #define RECURSE\_CHAIN 0

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

##### 4.1.1.3 #define RECURSE\_NONE 1

Definition at line 114 of file voms\_apic.h.

##### 4.1.1.4 #define TYPE\_CUSTOM 2

result of an S command

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

##### 4.1.1.5 #define TYPE\_NODATA 0

no data

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

##### 4.1.1.6 #define TYPE\_STD 1

group, role, capability triplet

Definition at line 84 of file voms\_apic.h.

4.1.1.7 `#define VERIFY_CERTLIST 0x00000040`

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

4.1.1.8 `#define VERIFY_DATE 0x00000001`

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

4.1.1.9 `#define VERIFY_FULL 0xffffffff`

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

4.1.1.10 `#define VERIFY_ID 0x00000020`

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

4.1.1.11 `#define VERIFY_KEY 0x00000004`

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

4.1.1.12 `#define VERIFY_NONE 0x00000000`

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

4.1.1.13 `#define VERIFY_NOTARGET 0x00000002`

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

4.1.1.14 `#define VERIFY_ORDER 0x00000010`

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

4.1.1.15 `#define VERIFY_SIGN 0x00000008`

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

4.1.1.16 `#define VERR_COMM 3`

Server problem

Definition at line 131 of file voms\_apic.h.

4.1.1.17 `#define VERR_DIR 13`

Directory error

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



**4.1.1.18 #define VERR\_EXTRINFO 9**

VO name and URI missing

Definition at line 139 of file voms\_apic.h.

**4.1.1.19 #define VERR\_FORMAT 10**

Wrong data format

Definition at line 140 of file voms\_apic.h.

**4.1.1.20 #define VERR\_IDCHECK 8**

User data in extension different from the real ones

Definition at line 136 of file voms\_apic.h.

**4.1.1.21 #define VERR\_MEM 16**

Memory problems

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

**4.1.1.22 #define VERR\_NODATA 11**

Empty extension

Definition at line 141 of file voms\_apic.h.

**4.1.1.23 #define VERR\_NOEXT 5**

VOMS extension missing

Definition at line 133 of file voms\_apic.h.

**4.1.1.24 #define VERR\_NOIDENT 2**

Cannot identify itself (certificate problem)

Definition at line 130 of file voms\_apic.h.

**4.1.1.25 #define VERR\_NOINIT 6**

Initialization error

Definition at line 134 of file voms\_apic.h.

**4.1.1.26 #define VERR\_NONE 0**

Error codes.

Definition at line 128 of file voms\_apic.h.

**4.1.1.27 #define VERR\_NOSOCKET 1**

Socket problem

Definition at line 129 of file voms\_apic.h.

**4.1.1.28 #define VERR\_NOTAVAIL 21**

Method not available

Definition at line 151 of file voms\_apic.h.

**4.1.1.29 #define VERR\_ORDER 19**

Ordering different than required

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

**4.1.1.30 #define VERR\_PARAM 4**

Wrong parameters

Definition at line 132 of file voms\_apic.h.

**4.1.1.31 #define VERR\_PARSE 12**

Parse error

Definition at line 142 of file voms\_apic.h.

**4.1.1.32 #define VERR\_SERVER 15**

Unidentifiable VOMS server

Definition at line 145 of file voms\_apic.h.

**4.1.1.33 #define VERR\_SERVERCODE 20**

Error from the server

Definition at line 150 of file voms\_apic.h.

**4.1.1.34 #define VERR\_SIGN 14**

Signature error

Definition at line 144 of file voms\_apic.h.

**4.1.1.35 #define VERR\_TIME 7**

Error in time checking

Definition at line 135 of file voms\_apic.h.

4.1.1.36 `#define VERR_TYPE 18`

Returned data of unknown type

Definition at line 148 of file voms\_apic.h.

4.1.1.37 `#define VERR_VERIFY 17`

Generic verification error

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

## 4.1.2 Typedef Documentation

4.1.2.1 `typedef void* gss_cred_id_t`

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

4.1.2.2 `typedef void* gss_ctx_id_t`

Definition at line 43 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

|               |  |
|---------------|--|
| <i>vd</i>     | The vomsdata structure.                        |
| <i>target</i> | The target to add. It should be a FQDN.        |
| <i>error</i>  | 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

|                    |  |
|--------------------|--|
| <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>     | Command  |
| <i>vd</i>          | RETURN PARAMETER: contains the data returned by the connection |
| <i>error</i>       | 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

|                    |  |
|--------------------|--|
| <i>data</i>        | and  |
| <i>datalen</i>     | fields.  |
| <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>version</i>     | is the version number of the data.                             |
| <i>vd</i>          | RETURN PARAMETER: contains the data returned by the connection |
| <i>error</i>       | 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

|              |  |
|--------------|--|
| <i>v</i>     | The structure to copy.                         |
| <i>error</i> | 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

copy of another vomsdata structure.

#### Parameters

|              |  |
|--------------|--|
| <i>vd</i>    | The structure to copy.                         |
| <i>error</i> | 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

|              |   |
|--------------|---|
| <i>vd</i>    | the vomsdata structure to analyze             |
| <i>error</i> | 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

|          |                                     |
|----------|-------------------------------------|
| <i>v</i> | Pointer to the structure to delete. |
|----------|-------------------------------------|

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

Frees a contactdata vector.

#### Parameters

|             |                     |
|-------------|---------------------|
| <i>list</i> | 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

|               |   |
|---------------|---|
| <i>vd</i>     | The vomsdata structure to analyze   |
| <i>error</i>  | The error returned by the last function   |
| <i>buffer</i> | 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. |
| <i>len</i>    | 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

|               |  |
|---------------|--|
| <i>buffer</i> | OUTPUT PARAMETER contains the converted data   |
| <i>buflen</i> | OUTPUT PARAMETER contains the length of buffer |
| <i>vd</i>     | contains the data to convert                   |
| <i>error</i>  | 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

|               |   |
|---------------|---|
| <i>vd</i>     | The correctly initialized vomsdata structured.  |
| <i>alias</i>  | The alias to look for.  |
| <i>system</i> | The directory in which to look for the system configuration files. If NULL, defaults to /opt/ed-c/etc/vomses  |
| <i>user</i>   | 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. |
| <i>error</i>  | 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

|               |   |
|---------------|---|
| <i>vd</i>     | The correctly initialized vomsdata structured.  |
| <i>vo</i>     | The VO to look for.   |
| <i>system</i> | The directory in which to look for the system configuration files. If NULL, defaults to /opt/edc/etc/vomses   |
| <i>user</i>   | 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. |
| <i>error</i>  | 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

|              |  |
|--------------|--|
| <i>vd</i>    | The vomsdata structure.                        |
| <i>error</i> | 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

|               |  |
|---------------|--|
| <i>buffer</i> | contains the data to be converted                              |
| <i>buflen</i> | contains the length of buffer                                  |
| <i>vd</i>     | RETURN PARAMETER: contains the data returned by the connection |
| <i>error</i>  | 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**

|             |  |
|-------------|--|
| <i>voms</i> | The directory which contains the certificates of the VOMS servers  |
| <i>cert</i> | The directory which contains the CA certificates<br><br>If voms_dir is empty, the value of the environment variable X509_VOMS_DIR is taken<br><br>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\_LoadCredentials ( X509 \* cert, EVP\_PKEY \* pkey, STACK\_OF(X509)\* chain, struct vomsdata \* vd, int \* error )****4.1.3.31 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**

|              |   |
|--------------|---|
| <i>order</i> | the group:role attribute.                     |
| <i>vd</i>    | RETURN PARAMETER: contains the modified data. |
| <i>error</i> | RETURN PARAMETER: Qualifies the error message |

**Returns**

failure (0) or success (<>0)

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

Unsets the return order of the attributes.

**Parameters**

|              |   |
|--------------|---|
| <i>vd</i>    | RETURN PARAMETER: contains the modified data. |
| <i>error</i> | RETURN PARAMETER: Qualifies the error message |



**Returns**

failure (0) or success (<>0)

**4.1.3.33 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**

|              |   |
|--------------|---|
| <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  |
| <i>vd</i>    | RETURN PARAMETER: contains the data returned by the connection        |
| <i>error</i> | RETURN PARAMETER: Qualifies the error message                         |

**Returns**

failure (0) or success (<>0)

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

Gets VOMS information from the given extension

**Parameters**

|              |  |
|--------------|--|
| <i>ext</i>   | The extension to parse.  |
| <i>vd</i>    | RETURN PARAMETER: contains the data returned by the connection |
| <i>error</i> | RETURN PARAMETER: Qualifies the error message                  |

**Returns**

failure (0) or success (<>0)

**4.1.3.35 int VOMS\_RetrieveFromAC ( AC \* *ac*, struct vomsdata \* *vd*, int \* *error* )**

Gets VOMS information from an existing globus proxy

**Parameters**

|              |  |
|--------------|--|
| <i>ac</i>    | AC from which to get the credentials                           |
| <i>vd</i>    | RETURN PARAMETER: contains the data returned by the connection |
| <i>error</i> | RETURN PARAMETER: Qualifies the error message                  |

**Returns**

failure (0) or success (<>0)

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

Gets VOMS information from the given globus credential

##### Parameters

|              |  |
|--------------|--|
| <i>cred</i>  | The credential from which to retrieve the certificate.         |
| <i>how</i>   | Recursion type   |
| <i>vd</i>    | RETURN PARAMETER: contains the data returned by the connection |
| <i>error</i> | RETURN PARAMETER: Qualifies the error message                  |

##### Returns

failure (0) or success (<>0)

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

Gets VOMS information from the given globus context

##### Parameters

|              |  |
|--------------|--|
| <i>ctx</i>   | The context from which to retrieve the certificate.            |
| <i>how</i>   | Recursion type   |
| <i>vd</i>    | RETURN PARAMETER: contains the data returned by the connection |
| <i>error</i> | RETURN PARAMETER: Qualifies the error message                  |

##### Returns

failure (0) or success (<>0)

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

Gets VOMS information from the given globus credential

##### Parameters

|              |  |
|--------------|--|
| <i>file</i>  | The file from which to retrieve the certificate.               |
| <i>how</i>   | Recursion type   |
| <i>vd</i>    | RETURN PARAMETER: contains the data returned by the connection |
| <i>error</i> | RETURN PARAMETER: Qualifies the error message                  |

##### Returns

failure (0) or success (<>0)

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

Gets VOMS information from an existing globus proxy

##### Parameters

|              |  |
|--------------|--|
| <i>how</i>   | Recursion type   |
| <i>vd</i>    | RETURN PARAMETER: contains the data returned by the connection |
| <i>error</i> | RETURN PARAMETER: Qualifies the error message                  |

## Returns

failure (0) or success (<>0)

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

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

## Parameters

|               |   |
|---------------|---|
| <i>length</i> | Lifetime requested.                           |
| <i>vd</i>     | RETURN PARAMETER: contains the modified data. |
| <i>error</i>  | RETURN PARAMETER: Qualifies the error message |

## Returns

failure (0) or success (<>0)

4.1.3.41 int VOMS\_SetTimeout ( int *t*, struct vomsdata \* *vd*, int \* *error* )

4.1.3.42 int VOMS\_SetVerificationTime ( time\_t *verificationtime*, struct vomsdata \* *vd*, int \* *error* )

4.1.3.43 int VOMS\_SetVerificationType ( int *type*, struct vomsdata \* *vd*, int \* *error* )

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